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THE TRAINING OF SEAMEN.

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Admiral Sir ANTHONY H. HOSKINS, G.C.B., in the Chair.

I FEEL that an apology is due to the members of this Institution—especially to the naval members—for the fact that I, a civilian, a mere student of naval affairs, should venture to address such an audience as this on a subject so highly technical and professional as that of "The Training of Seamen." The explanation is at once simple and ample. I was invited by the Council to undertake the task. It was thought desirable that the matter should be discussed in this theatre, and although there are plenty of naval officers who could discourse on it with far greater weight and authority than I can claim, yet I understand that it seemed to the Council that an outsider might possibly be better able to do justice to both sides than a naval officer, who must almost of necessity belong to one or other of the two opposing schools into which the Service is on this subject divided. In any other circumstances I should never have presumed to address a professional audience on such a subject. But the invitation of the Council really left me no alternative. I was bound to accept it, but I was also bound by its spirit, if not by its terms, to do my utmost to hold the balance even. My own opinions are of no importance in the matter I am not here to propound them. I have undertaken to open the question, not to decide it. It can only be decided in the long run by the mature and reasoned judgment of the sea service. It is not for me to anticipate that judgment. I have only undertaken to set forth some of the leading considerations which must in any case determine it.

I take it the real problem is how to adapt the seaman to the modern conditions of seamanship, how to train the man who is to fight at sea to make the best of the element on which he fights, of the weapons with which he is furnished, of the ship in which he serves. I think I beg no question by stating the problem in this way. Reduced to its simplest terms, it is comprised in the two words "sea" and "fight." You cannot

solve it by neglecting, still less by eliminating, the first of these. It never has been solved in this way at any recorded period of the history of naval warfare. I do not deny that attempts have often been made so to solve it; but I am not aware that they have ever been successful. "Maritime skill," said Pericles more than two thousand years ago, "is like skill of any other kind, not a thing to be cultivated by the way or at chance times; it is jealous of any other pursuit which distracts the mind for an instant from itself." The secret of the sea is revealed only to those who seek it afloat. The mastery of the sea is only to be had by submitting to its conditions.

But I need not labour this point. I suppose we are all agreed about it. It is, I assume, ground common to both parties in a controversy with which I shall presently come to closer quarters, that training at sea is indispensable to the fighting seaman, that the seaman is one who, irrespective of the particular vehicles of his warfare—whether rowing-ships, sailing-ships, or steam-ships—has assimilated the sea as an organic part of his experience, and is as familiar with it as any other craftsman is with the materials of his craft. If this is not so, the problem is at once simplified and solved. Eliminate the sea from the fighting seaman's experience, and you get the marine artilleryman. He is, I am told, a much cheaper product than the seaman gunner, and if he is as good there is no more to be said. If he is not as good, I hardly know what makes the difference, unless it be the assimilation of the sea as an organic element of the seaman gunner's experience.

I will assume, then, as a starting-point, that sea experience is an essential element in the training of the fighting seaman. If this assumption is illegitimate, I have no doubt I shall be told so before I leave this theatre; but I believe that on this point Sir John Hopkins is at one with Sir Cyprian Bridge, Sir James Erskine with Sir Gerard Noel. I will also assume not only that the fighting seaman must be trained at sea, but that he must be trained in the use of those weapons with which he will have to fight when the time comes. You can't teach a man to fight a Q.F. gun by training him to shoot with bows and arrows. You can't make him a marksman with a breech-loading small-bore rifle by teaching him the manual of Brown Bess; you can't make him a seaman gunner by training him with smooth-bores or even with muzzle-loaders—though I fancy it is only quite lately that this almost self-evident proposition has been accepted by the Admiralty in the training of the Reserve. The fighting seaman must know how to use the weapons with which he will have to fight. He must be able to shoot with them, and to shoot straight. That is essential, and it is also essential, nay, vital, that he should be able not only to shoot straight, but to shoot straight from a moving platform. To make a man master of himself and his weapon in all circumstances, by night or by day, in calm or in storm, is, I take it, the be-all and the end-all of all naval training whatsoever. However much the methods of different schools may vary, that is the result which all seek to attain.

So far, however, we have not got beyond the training of the individual, of the unit. But a gun's crew or a ship's company, or any other organised

aggregate between the two, is not a mere fortuitous assemblage of units. It is an organism, articulate, coherent, and instinct with the sense of common action and comradeship. Just as you cannot make a fighting seaman by training him on shore and then drafting him to a ship when you want him to fight, so you cannot make a gun's crew or a ship's company by the mere assemblage of the required number of units. They must shake down together, must work together, must know each other, and know that they can trust each other. Here again I hope I am still on ground which no one will seriously dispute. We all know that a ship's company is a very different thing at the end of a commission from what it was at the beginning. At the beginning it was a fortuitous assemblage of units; at the end, and indeed long before the end, it is a highly developed organism in which each part has its special function and all work together for a common purpose and end—that of fighting their ship to the best advantage, that of getting out of it the utmost measure of efficiency which men who are perfect masters of their weapons and of themselves can achieve.

There are thus two elements of a fighting seaman's efficiency: first the perfection of the individual unit, and next the perfection of the organism of which each unit forms a subordinate part. How are we to attain these two associated ideals? Obviously the sea is a condition common to both. The ship is the agency which combines the units into an organism. The weapons are the instruments which determine the efficiency of both. Nothing is of vital moment except that which tends directly or indirectly either to improve the unit or to perfect the organism. Nothing can be safely neglected which experience shows to be specially conducive either to one purpose or to the other.

Unfortunately we here part company with the direct guidance of experience. We know how the fighting seaman was trained to fight in former days and how ships' companies were moulded into organisms splendidly adapted to their ends from the days of the Armada to the days of Trafalgar—and for the matter of that to the days of Algiers and Navarino, of Acre and Sebastopol. There were only two things to be done throughout that period—to sail the ships, and to fight the guns; and broadly speaking there was no vital difference between the methods in vogue at the beginning of the period and those in vogue at the end. Experience was accumulated and methods were developed, but there was no breach of continuity, and Nelson would have been more at home with Drake than either could possibly be with a modern admiral leading a modern fleet into action. We have then to recast the training of the fighting seaman altogether and to adapt it to entirely novel conditions. It is certain that the most vital element of the old method and tradition, the discipline of masts and sails, has vanished altogether from the fighting ship of the future. It is gone and nothing can restore it—to the fighting ship of the future. But has it so completely gone, and ought it so completely to go from the training of the fighting seaman of the future? It is not for me to answer these questions. But I will offer certain considerations which ought, I think, to be very carefully taken into account before they are finally answered in the affirmative.

Training of all kinds is merely a means to an end. The end in the case of the fighting seaman is, as I have said, to make him master of himself, master of his weapons, and helpful to his comrades. But you do not always get the fastest to your end by taking what seems at first sight the shortest way to it. This is especially the case in education. If you want to make a young man a good lawyer or a good physician, you do not begin by teaching him the rudiments of law or the rudiments of medicine as soon as he has mastered the three R's. You give him a good general education first. In like manner, when you enter a boy for the Navy, you do not at once begin to teach him to shoot. You recognise the advantage of more general training as a preliminary, and you do your best to secure it for him. That was easy enough in the old days, and the problem almost solved itself. Battles were fought by seamanship and won by gunnery, and there was something like a pre-established harmony between the two. The qualities engendered by seamanship were just those which were needed for the perfection of gunnery at sea. Of course, seamanship was the primary need, because in the days of sailing-ships a man could hardly begin to become a gunner until he was already a seaman. It was no use his knowing how to fight his ship unless he knew how to sail it; indeed, in many cases to sail it was to fight it. Hence seamanship was the foundation of the fighting seaman's training, gunnery was its finish. But the two were really organic elements of the same inseparable whole. They were not separated in fact as I have separated them in analysis. What they produced together was the best fighting man at sea that the world has ever seen. Which element was the most potent in producing this result? Unquestionably it was the seamanship. At any rate, it was that which made the British tar distinctively what he was. Gunnery was a very simple matter. To handle a gun was good training in gymnastics, but scientific gunnery was unknown in the great wars. It was not until 1830 that the first school of gunnery was established in the "Excellent" at Portsmouth. Up to that time all that the bluejacket knew of gunnery was learnt in the ordinary routine of the Service, and the ordinary routine of the Service was a routine of seamanship. In other words, it was seamanship that made the fighting seaman of the past. Perfection in gunnery and the use of the other simple weapons of the fighting seaman's craft was a superadded finish—a sort of by-product of consummate seamanship. It was seamanship that trained the individual; it was seamanship that moulded the ship's company into an organic fighting machine.

Well, seamanship in that sense is now a thing of the past. It survives here and there, even in the Navy, but it is certain that no fighting man of the future will ever go into action under the impulse of the wind or under the conditions which wind impulse involved. It remains, however, as necessary as ever to cultivate in the fighting seaman of the future just those qualities, physical, mental, and moral, which the discipline of masts and sails imparted in perfection. How are we to do it? Gunnery most assuredly will not do it alone, and yet gunnery developed beyond all recognition alone survives of the training which made the fighting sea-

man of the past. Now the physical part of modern gunnery is mainly an affair of pressing knobs and pulling handles, not comparable as a gymnastic to the manual handling of the guns of an old sailing frigate or three-decker. I do not speak of the intellectual or scientific part, because it has little to do with the training of the bluejacket. You cannot make a scientific artillerist of every bluejacket, and it is waste of time to try. It is enough if you make him master of himself and master of his weapon, able to shoot straight from a moving platform. The only other element of the old training which still survives is the handling of boats under sail. This, I suppose, we all regard as invaluable, but it is rather a puny element, and though we may theoretically regard it as invaluable, I doubt if in practice it receives in the Service the time and attention to which, if invaluable, it is entitled. If it did, men-of-war's men should be some of the best boat sailors in the world. *I* do not say they are not, but I know many good judges who do.

Thus there seems to be an element wanting in the training of the modern fighting seaman. It consists of those qualities which the old discipline of masts and sails was peculiarly fitted to impart, and did, as a matter of fact, impart in a quite incomparable manner. Those qualities were defined not long ago in *The Times* as follows:—"Self-reliance and resource, quickness of eye and steadiness of nerve, calmness and self-possession in emergency, steadfastness in danger, helpfulness in all difficulties, and a quick sense of comradeship"; and as this definition has frequently been quoted in recent discussions of the subject, I suppose I may adopt it as one which both parties will accept. These qualities are not, I think, to be obtained from gunnery training alone—I shall have something to say on this point presently—and I doubt if they are to be obtained in their full measure from such practice in boat-sailing as the modern bluejacket gets. I suppose we are all agreed that it is eminently desirable still to have these qualities in our bluejackets if we can get them. I take it for granted that the chief aim of all drills and exercises afloat is, as far as may be, to impart and develop them. The rulers of the Service and its executive officers have devoted immense pains and energy to devising a system of training, founded on the conditions and appliances of the modern war-ship, which should, as far as possible, develop artificially those qualities which were the natural product of the discipline of masts and sails. Have they so far succeeded? *Is* the modern bluejacket as resourceful a man, as self-reliant, as quick in emergency, as helpful in difficulty, as staunch in comradeship, as his predecessor of the sailing-ship period? Beyond all question he is better educated, more intelligent, and morally less of a "scallywag"; but splendid fellow as he is, the old qualities of the fighting seaman seem to be no longer what they once were, his natural and native inheritance. We have tried to supply them by artificial means with no very assured success. We know that we cannot do without them, or that if we do the fighting seaman of the future will be to that extent inferior to the fighting seaman of the past. It is quite pathetic to watch our efforts to do by artificial methods what the discipline of masts and sails did by natural methods, and it is not less depressing to note

their comparative failure. I wonder why it has never occurred to us that the natural methods are still the best and still as available as ever for all the practical purposes of training.

It is not for me to advocate this solution of the problem. I have undertaken to hold the balance even, and can do no more than state both sides of the case as clearly and cogently as I can without taking a side myself. What is now the best method for turning a boy just entered for the Navy into a fighting seaman? How can we best enable him, as I have said above, "to make the best of the element on which he fights, of the weapons with which he is furnished, of the ship in which he serves"? In a certain sense we have no experience to help us in answering these questions. It is all theory, all novelty, for we have no experience of naval warfare on a large scale with ships of the present day. Yalu, it may be said, and Manila and Santiago. I do not forget nor ignore them. But compared with the teaching of the great wars of the past, with centuries of experience in the sailing-ship period, they are mere incidents of no great moment. Yet, although we have no experience to guide us and must perforce adapt our theories as best we can to the novelty of the conditions, still I suppose we are all agreed that we can hardly train the fighting seaman of the future to make the best of himself and of his weapons if we begin by neglecting or eliminating those qualities which made the perfection of the fighting seaman of the past. "Self-reliance and resource, quickness of eye and steadiness of nerve, calmness and self-possession in emergency, steadfastness in danger, helpfulness in all difficulties, and a quick sense of comradeship"—these, as it seems to me, are the physical, mental, and moral qualities indispensable to the fighting seaman, and, indeed, to the fighting man as such, whether he fights on land or on sea. How best to impart them to the man who fights on land, I am not here to determine; but if it could be shown beyond all question that they could best be imparted to the recruit by training him for a given period in a sailing-ship at sea I should not shrink from the conclusion that that would be the best preliminary training to give to the future soldier—nor after some of our recent experiences am I at all sure that the proposition is really as paradoxical as it sounds. But I have only to consider how best to impart them to the fighting seaman. Now we know there is one way in which they can certainly be imparted, because for two hundred and fifty years they were imparted with the most brilliant results. Why are we now to discard this emphatic teaching of experience? The answer is, and I cannot deny its cogency, that whereas the old seamanship was an organic and essential part of the fighting seaman's training, it can henceforth never be more than an accidental and artificial part, bearing no direct relation to the conditions in which he will have to fight. Well, it cannot be more accidental and artificial than gymnastics and musical drill, and as to its bearing no direct relation to the conditions in which the modern seamen will have to fight, are not the moral conditions of comradeship and resourcefulness quite independent of the nature of the weapons and the structure of the ship? Another objection of undoubted weight is that the qualities

engendered by the discipline of masts and sails are not to be had except at a price which is too heavy to pay, that the bluejacket nowadays has to learn so much that there is no time to give him as much training in the discipline of masts and sails as would be needed to impart the qualities required, and that if there were, the organisation needed for such a system of training would be too costly in ships and *personnel* for the country to provide. Now, as to time, the British bluejacket serves for a much longer period than the bluejacket of any other Navy, and yet I believe there are several important Navies which regard the discipline of masts and sails as still an essential element of their seamen's training. As to the cost, that I take it is entirely a question for the British taxpayer to decide. If the Admiralty were to say to him:—"You can have this system if you choose to pay for it. It will cost a great deal, indeed, if adequately organised, it will probably run into millions annually, but it will be worth the money," does anyone here doubt that the British taxpayer would provide the money without a murmur? Why, the one complaint he has made this year has been that the Admiralty are only asking to be allowed to spend thirty millions! But would it be worth the money? I cannot pretend to answer that question myself. I want the Admiralty and the Service to say squarely whether it would or not. I know that very high authorities like Sir John Hopkins, Sir James Erskine, and others insist that it would not, that if the money were provided we could better spend it in methods of training more directly associated with the modern art of fighting at sea. But then I know that equally high authorities like Sir Cyprian Bridge, Sir Gerard Noel, and others take exactly an opposite view. I cannot decide between these high authorities. It is for the Service to decide; but I still have some considerations to offer which may be thought to bear on the decision.

A very distinguished officer who is no advocate for retaining the discipline of masts and sails, writes to me as follows:—"I served as a lieutenant and watchkeeper in a ship of the last squadron practically worked under sail alone. I felt myself to be 50 per cent. more worth as a naval officer after that two years' experience. If it were possible to give every officer and man of the executive line a similar experience, we should possess absolutely the finest *personnel* the world had ever known. Alas! this is impossible"; and the writer goes on to explain why it is impossible. His reasons are very cogent reasons—reasons of organisation, reasons of policy, reasons of expense. Nevertheless, they point, perhaps, to difficulties rather than to impossibilities. We can have absolutely the finest *personnel* the world has ever seen if we choose to pay the price for it. It would be a very high price to pay, no doubt. It would tax us heavily in organisation, in *personnel*, and in purse. But is any price too high to pay for such a result? "I felt myself," says my correspondent, "to be 50 per cent. more worth as a naval officer after that two years' experience." If by an increase of 10 per cent., or even 20 per cent., in our expenditure, we increased the efficiency of our *personnel* by 50 per cent., should we not be largely the gainers? After all, it is not the gun but the man behind the gun that wins the victory. Make every man behind the guns of the British Navy 50 per cent. a better man, and you double the strength of the Fleet.

But this estimate of advantage is, it will be said, merely an individual opinion. It is, and I quote it as nothing more. It is, however, the opinion of an officer who is himself no advocate of the discipline of masts and sails, and I quote it specially for that reason. I cite him as an adverse witness. When he tells me that if we could do a certain thing—that is, give every officer and man a sufficient training in a squadron practically worked under sail alone—we should have absolutely the finest *personnel* the world has ever seen, and then goes on to say that we cannot do it, I have so high a respect for his judgment and authority that I feel almost compelled to believe he is right. At any rate, *I* cannot prove that he is wrong. I must leave that to Sir Gerard Noel. He is prepared to tell us—indeed he has told us—how the thing can be done, and on that point it would be impertinent in me to add anything to what he has said. He has served in the Training Squadron, he has been a Lord of the Admiralty, his flag has flown in a modern fleet. On his authority I take the liberty of wiping my correspondent's word "impossible" out of the record. Difficult the thing may be, costly it must be; but impossible it cannot be, because Sir Gerard Noel has shown us how it can be done.

But, it may be said, the game is not worth the candle. You might spend the money required to greater advantage in other methods of training. Then we must ask the advocates of such alternative methods to define them, and to show by results that they are equally well adapted with the discipline of masts and sails to lay the foundation of the fighting seaman's training. I am not contending—I suppose no one will contend—that drill aloft is any longer directly conducive to the fighting seaman's efficiency. It is a good foundation, many indeed hold that it is still the best, on which you can build. It has ceased to be an end in itself, as it was in the days when ships were propelled by winds; but it has not on that account necessarily ceased to be an excellent means to the end which we must still somehow attain. Someone has said, "For a war navy, if sails did not exist, it would be necessary to invent them," just as if Greek and Latin did not exist, it would be necessary to invent them for the purposes of a liberal education. No one ever now wants to talk Greek or Latin. But few who have been privileged to acquire an intelligent grasp of those languages and their literature are found to regret the time devoted to the acquisition; and "the humanities," as they are justly called, though of no direct use for practical purposes, are still the foundation of the best education known to the civilised world. Well, the analogy is really a very close and instructive one. Before you begin to train a man for any liberal profession you lay a good foundation in the study of the humanities. It is found to brace the mind, to quicken the intelligence, to enlarge the sympathies, to stimulate all the faculties, and long experience has taught us that nothing else does all this so well. Hence, when Greek and Latin ceased to exist as living languages, the civilised world at once proceeded to invent them, and has profited by the invention ever since. There were always some who said, "Oh! they are dead and done with, and it is no use going on teaching them. As well teach men to get fire by rubbing sticks together, or to get food by throwing a

boomerang." But on the whole the world has not listened to these anti-humanists, even though a great man once said that there was more instruction in a single issue of *The Times* than in "all the works of Thucydides." I should be sorry to underrate the instruction to be derived from any issue of *The Times;* but I suspect the editor would say that the study of Thucydides has indirectly, if not directly, a good deal more to do with it than most people think; and having studied Thucydides myself, I will venture to assure my naval friends that until Mahan arose, no historian known to me had more fully grasped the nature of sea-power, and even the essentials of naval training.

Now just the same thing has been done by drill aloft for naval training as has been done for ages past by the humanities for general education. It is true that drill aloft is no longer of any use for directly practical purposes, but then exactly the same thing may be said of Greek and Latin. Nor again need we make all our seamen finished masters of the art of sailing, any more than we make all our schoolboys profound classical scholars. The boy who has caught the spirit of Homer and Thucydides, of Horace and Tacitus, may not be qualified to edit a Greek play, and the seaman who has learnt what drill aloft can teach him may not be able to claw off a lee shore; but each has learnt something which nothing else can teach as well, and is better equipped for the life he has to lead and the work he has to do. Drill aloft, for example, is by common consent the best gymnastic in the world, and that is no small thing in days when every naval officer knows well how difficult it is in a modern ship to develop and maintain the physique of the seaman. Again, it develops, as nothing else does, self-reliance, resource, and comradeship. This is recognised everywhere but in the naval Service. The Board of Trade insists that every candidate for a master's certificate shall have made a required number of voyages in sailing-ships. The North German Lloyd has lately made arrangements at great cost for ensuring that all its future officers shall have had a similar training. Now the discipline of masts and sails is no more directly of use to the officer of an ocean liner than it is to a naval officer. Surely it is a paradox to say that what is the best sauce for the mercantile goose is not even a good sauce for the naval gander.

But, I shall be told, drill aloft does not make a man a good gunner. No, but experience of the sea does make a man a good seaman gunner, and nothing else does or can. If this proposition is not self-evident, I can offer proof of it. There is at least one case authentically known to me in which a man—a marine artilleryman—was the best shot of his corps on land, and yet when he went to sea and had to fire from a moving platform at a moving target he could not even pull the trigger. So much for the training on land of men who have to fight at sea. It does not look as if we could safely man our fighting-ships with marine artillerymen. Now for the other side of the picture. Let us see what the effect of drill aloft is on men when they are learning to shoot. A "Captain, Royal Navy" wrote as follows in *The Times* of 4th January last:—"A few years ago the commander at Whale Island was what we call a keen sailor man; his argument was that a man who was a smart seaman aloft would turn

out a better gunner, torpedo-man, or any other specialist, than a man who had never been with masts and sails; to prove his point he kept a list of men who had served in masted ships, and to his astonishment at the end of the year the men who turned out the smartest and best gunners were those who had never served with masts and sails." No one will question the importance of this testimony, so far as it can be authenticated; but I must observe that it amounts to no more than the anonymous statement by one man of another man's alleged experience. On the other hand, I can give some figures very kindly supplied to me by a well-known gunnery officer, which seem to point quite unmistakably in an opposite direction. On 10th April last, of the men under training at Whale Island for the rating of gunnery instructor, 41 per cent. were found to have passed through the Training Squadron; and at the same time of men under training for captains of guns 42 per cent. were found to have passed through the Training Squadron. I must leave the full significance of these figures to be appreciated by those who are better acquainted with the details of the system in force at Whale Island than I can pretend to be. But my informant tells me that only 30 per cent. of the seaman class have of late years passed through the T.S., and it seems to follow that if the effect of the T.S. on them were, as is alleged by a "Captain, Royal Navy," imperceptible, not more than 30 per cent. should be found in any given class under instruction for the rating of gunnery instructor. Of every 1,000 men under instruction at Whale Island, 300 should be T.S. men, and 700 non-T.S. men. Let me assume that of these 1,000 one per cent. are selected for more advanced training as gunnery instructors. Then, of these ten men so selected, three should be T.S. men, and seven non-T.S. men. As a matter of fact, the proportion is found, or was found in April, to be approximately four and six. According to Sir John Colomb, the seaman class consists of about 60,000 men, of whom one per cent., or 600, will, on the percentage I have assumed, become gunnery instructors, while 30 per cent., or 18,000 men, will have passed through the T.S. Of these 18,000 men, 240 will, according to the figures supplied to me by my informant, become gunnery instructors, while only 360 gunnery instructors will be derived from the remaining 42,000 men. I know of no difference between the two categories of men, except that the one has passed through the T.S. and the other has not. If the effect of the T.S. were *nil*, the proportion of gunnery instructors supplied from each category should be as 180 to 420 It is, as we have seen, 240 to 360. In other words, the effect of the T.S. is to increase the acting seaman gunner's chance of becoming a gunnery instructor or a captain of gun—for the reasoning which applies to one rating would seem to apply equally to the other—by more than 33 per cent. "I felt myself to be 50 per cent. more worth as a naval officer," says the high authority I have already quoted. In like manner, the acting seaman gunner may say, "I know myself to have a better chance by more than 33 per cent. of rising to the higher ratings for having passed through the T.S." No wonder that many officers of the "Excellent"—not old salts, who might be biassed by the sentiment if not by the prejudices of the past, but the very cream of the modern naval Service—

are convinced by their experience at Whale Island that the way to make the best of the man behind the gun is to retain and even to develop the discipline of masts and sails in his preliminary training. This I know to be the case. The advocates of masts and sails—the men who think that if they did not exist they would have to be invented—are not to be found only among those seniors of the Service who entered it when drill aloft was the be-all and the end-all of the seaman's training ; they are to be found among the more thoughtful, capable, and highly educated of the junior officers—men who judge by results, who know the results by which they judge, and can test them, and who are as often as not convinced against their own natural bias and prepossession. A "Captain," whose letter appeared in *The Times* of 23rd December, 1899, quotes a young officer as having said of his appointment to the T.S., "I hope I shall soon get something better than that." I know that type of young officer very well. Very few young officers appointed to the T.S. would express themselves differently. But how do they feel and how do they express themselves when their service in the T.S. is at an end? Do they then say that their time has been ill-spent or wasted? I cannot answer for the class, but I know what individuals think and feel. I have known both captains and junior officers who went to the T.S. exactly with the sentiments reported by a "Captain." They have left it with the conviction that they have learnt something which nothing else in their sea experience has ever taught them, and that what they have learnt their men have learnt also. It must be admitted, I think, that the tendency of much of the modern bluejacket's training is to turn a man into a machine. It is to the sea and its teaching that we must look for the counter-action of this tendency. Few will deny that the discipline of masts and sails is the most consummate outcome of the sea and its teaching that the world has ever known. This discipline still applies, albeit very imperfectly, to about 30 per cent. of the seaman class, and combined with a persistent and very active tradition, goes far to leaven the whole Service and to make the British bluejacket what Ladysmith showed him to be—the "handy-man" of the Empire. But when the tradition is extinct, when the discipline is finally abandoned, can we be sure that the "handy-man" will survive? It is for the Service to answer this question, not for me. But will any officer of ten or twelve years' experience tell me that the average petty officer is as good as his predecessor was a dozen years ago, when masts and sails were still to be found in nearly all sea-going men-of-war, and when every petty officer must have been nurtured in their discipline? And if, as I anticipate, the answer is in the negative, will the same authorities tell me what is the cause of the difference and where the remedy is to be found?

The foregoing considerations do not of course decide the issue in favour of maintaining the discipline of masts and sails as an element in the training of the modern seaman, but they do show, I think, that if we part with it we shall sacrifice some portion of the seaman's efficiency, we shall render him less handy, less resourceful, and less self-reliant. It may be that we *must* make this sacrifice, that there is no help for it. But let us

clearly understand what is the loss, and what is the gain, and let us ask the Admiralty and the Service to say why they are content to incur the loss and what compensating gain they expect to realise by incurring it. It is essentially a question of the balance of advantages. It is not in the least a question of sentiment and tradition. In spite of all sentiment and tradition, I assume that masts and sails must go unless the Service and its rulers can be convinced either that we cannot do without them, or that if we do without them we stand to lose more than we can gain. Now the gain to be anticipated is mainly in time and money—time in the more rapid training of the bluejacket to the use of the weapons with which he will have to fight, money by dispensing with a special and doubtless very costly organisation for keeping him at sea for perhaps one-twelfth of his period of service in ships which have no fighting value. As regards time, I understand that boys entered for the Royal Navy are at present trained in the harbour training-ships for about two years, some six weeks of which are spent in the brigs. Hence if this period were divided into one year to be spent in harbour and the second at sea, partly in the brigs and partly in specially organised, training-ships, no time would be lost in the end. I cannot undertake to work this idea out in detail. It is enough for me to suggest that if the thing is worth doing it can be done without either extending the normal period of the bluejacket's service or depriving the fighting fleet of his services for a time appreciably longer than at present. How best to do it is a professional and administrative question with which I dare not meddle. As to the cost, the mere question of money is not decisive of the question. If the game is worth the candle—I do not affirm that it is, though I offer the proposition for consideration and serious discussion—the British taxpayer will cheerfully light the candle and keep it burning.

But there are other difficulties I know. A training squadron such as I have suggested would require a very large staff of officers, specially qualified and trained to work it, and there are at present none too many for the ordinary needs of the Service. This, again, is mainly a question of money and organisation. It presents no greater difficulties than the question of training the bluejackets in drill aloft, and it is governed by exactly the same considerations of loss and gain. We cannot, of course, do everything at once, but if we are satisfied that experience in drill aloft is too valuable an element in the training of the naval officer to be lightly abandoned, I should be sorry to think so ill of the Admiralty as to doubt their capacity to organise a system for imparting it. But is it a valuable element in the training of the naval officer, and even if valuable, is it so valuable as to justify the cost at which alone it can be secured? I have myself so profound a belief in the efficiency, zeal, and devotion of naval officers, that I hardly know how to suggest that anything is needed to make them better than they are. But then what is it that has so far made them what they are? We must bear in mind that every officer of more than ten or twelve years' standing has served his apprenticeship to the discipline of masts and sails, and that until a very few months ago every midshipman before passing his final examination in seamanship

must have passed some six months either in the brigs or in the T.S. Thus there are at present very few officers on the active list who have not for a longer or shorter period undergone the discipline of masts and sails. Is it safe to affirm that when that discipline is finally eliminated the efficiency of the naval officer will suffer no abatement? Of his zeal and devotion in all conditions and circumstances, I, for one, can entertain no suspicion whatever. But his efficiency is the resultant of many forces and influences, and I think it most dangerous to assume that the abiding tradition and the still surviving influence of the discipline of masts and sails are factors of little or no moment in the sum. At any rate, I know that many officers even of those who hold that drill aloft must disappear from the training of the fighting seaman of the future, are far more concerned at the probable effect of its disappearance on the efficiency of the young officer than they are at its probable effect on the efficiency of the bluejacket. There is no training like sea-training for the man who has to fight at sea, and drill aloft is sea-training at its best. It is true that the sea-training in eye and nerve, in endurance and initiative, in readiness and resource, to be got in a destroyer or torpedo-boat is for the officer, if not for the bluejacket, about as good as it can be; indeed, it is little short of a providential dispensation that torpedo-boats and destroyers should have come into being just at the time when masts and sails were, as fighting appliances, disappearing into the limbo of the past. For this reason, even if torpedoes were themselves to follow masts and sails into the same limbo, it might very well be doubted whether it would be wise to give up torpedo craft as vehicles for the sea-training of young officers. But the advantage of masts and sails even over torpedo craft is that they train bluejackets in due proportion to their officers, and that they train both, as nothing else has yet been found to do so well, in that spirit of comradeship, of mutual trust and understanding, of skilful command and ready obedience, which, in all organised bodies of fighting men, is the very pith and marrow of fighting efficiency. "I had the happiness to command a band of brothers," said Nelson of his captains at the Nile. What Nelson said of his captains, every officer should be able to say of the men under his immediate command. That is the perfection of fighting organisation and efficiency alike on sea and on land. And yet I doubt if any naval officer here present will say that a modern war-ship gives as many opportunities of attaining that perfection in the course of a whole commission, as the normal conditions of a ship under sail at sea afford in almost every watch. It may be that the conditions of the modern naval service forbid us to seek this inestimable advantage, at any rate, by the methods which have so far secured it. But let us be quite sure that we get it somehow, and let as clearly understand how much we are sacrificing if we resolve to go without it. There is such a thing, as the German proverb reminds us, as pouring out the child with the bath water.

To sum up, I must acknowledge that, *primâ facie*, the presumption is against the retention of the discipline of masts and sails, now that it has ceased to have any organic relation to the equipment of the modern war-ship or any direct bearing on the efficiency of the modern fighting

seaman. That presumption must be rebutted, if at all, by argument. It must be shown to the satisfaction of plain men, rightly disdainful of fine-drawn reasoning and impatient of mere logic-chopping, that the discipline in question imparts qualities indispensable to the fighting seaman, that no other method has yet been devised for imparting these qualities in the required measure and degree, and that, as a matter of fact, the efficiency of officer and bluejacket has shown a tendency to decline in certain important directions and respects—however much it may have increased, as it doubtless has, in other directions and respects, not, perhaps, less important—in proportion as the contact of both with the discipline of masts and sails has been diminished. If so much cannot be established, the case for masts and sails in the future must inevitably go by default. No sentiment and no tradition can keep a system alive which right reason and the welfare of the Service have condemned to extinction. But I hope I have shown that even if sentiment and tradition are all on one side, they are associated with as much of right reason and intelligent regard for the welfare of the Service as may at least entitle the views of that side to serious, careful, and dispassionate consideration. I am not here to advocate the views of one side or of the other. But I cannot suppress my conviction that if masts and sails are to go, we must seek diligently for something to put in their place which shall do for the fighting seaman of the future what masts and sails have done for him in the past, and never rest until we have found it. Have we found it as yet? I hardly think we have. There would be no room for controversy if both sides were satisfied on that point. The new school of naval training—perhaps the dominant school in the Service—appears for the most part to acknowledge that the discipline of masts and sails is, or at least has been, a noble, even an incomparable, discipline, but to doubt whether it can with advantage be retained now that it is no longer and never can be again an organic factor in the seaman's life. There is so much to be said for this view, it is *primâ facie* so reasonable, and so much has been said for it with effect by officers whose authority in the Service is justly entitled to the highest deference, that I have not thought it necessary to set it forth in detail. It may, perhaps, be said to hold the field—it is certainly dominant for the moment at the Admiralty—and those who seek to dislodge it must be prepared to give the stoutest and most cogent reasons for the faith that is in them. But I must be permitted to point out that merely to disestablish masts and sails is by no means to solve the problem of the future training of the fighting seaman. You cannot eliminate one important element of a complex system and assume that what is left will, as a matter of course, hang together of itself. It may prove to have been the keystone of the arch, and in that case the stability and cohesion of the whole structure supported by it will be materially, perhaps even fatally, impaired by its removal. Hence, even on the assumption that masts and sails are to go, we are confronted with a problem of quite vital moment and of no ordinary complexity. Our national habit of "muddling through some how" may perhaps inspire us with the comforting conviction that things

will right themselves in the end. But we live in an age when the rule of thumb is being supplanted all over the civilised world by a scientific study of the conditions of right action and organised endeavour. We have learnt, and we repeat the lessons almost by rote, that the perfection of any organism consists in its precise adaptation to its environment, that the struggle for existence—of which war is the sternest and most acute phase—always ends sooner or later in the survival of the fittest. If the discipline of masts and sails is no longer fit to survive, it must go. But its disappearance does not solve the problem of adapting the mutilated organism to its changing environment, it only brings it into greater prominence and urgency. It may be, as Captain Eardley-Wilmot urges, and as I know other high authorities hold, that the fighting seaman of the future must be more of a mechanic than his predecessor, but it is certain that he must be just as little of a machine, that he must be not less perfectly adapted to the conditions and requirements of his environment. And that this is no mere fanciful view, too far-fetched to arrest the attention of a practical profession like that of the sea service, I will endeavour to show by glancing in conclusion at some of the larger historical aspects of the question.

There have been two great revolutions in the art and methods of naval warfare. The ship being essentially a mobile instrument of war, I conceive that an organic change in the mode of propelling it—any such change as involves a material alteration either in its fighting tactics or in its effective range of action—is of far greater import and moment than almost any change whatever in the weapons handled by its crew. For this reason I do not regard the invention of gun-powder—far-reaching as its effects have been and will be—as one of the two great revolutions in the art and methods of naval warfare. The first revolution took place when mechanical propulsion by means of oars was superseded by the natural propulsion of the wind acting on sails. There were loss and gain in the change, but on the whole what was lost in freedom of movement was more than compensated by increase of burden in the ships employed and by a correlative increase in the effective range of their action. Moreover, the indirect result of the change was immeasurably more momentous than its direct and immediate consequences. It meant the transfer of the centre of naval gravity from the Mediterranean to the Atlantic. The galley was essentially the implement of Mediterranean warfare, that is, of fighting in a landlocked sea; the sailing-ship was essentially the implement of oceanic warfare. The galley determined the fate of the world at Salamis, it determined the fate of Athens at Syracuse, it determined the fate of the Roman Empire at Actium, and fifteen centuries later it determined the fate of Europe at Lepanto within a few miles of Actium. But there its influence on human affairs ceased suddenly and for ever. Its power was never felt in anything like the same measure beyond the Pillars of Hercules. It could not be; the galley was not adapted to oceanic warfare. There are to my mind few things more significant in history than the strangely short interval which separated Lepanto from Gravelines. Many men who fought in the earlier action must have fought in the later.

Indeed but for his death, due not so much to age and infirmity as to the worry of serving such a master as Philip, Santa Cruz, who was already an admiral at Lepanto, would himself have commanded the Armada. But short as was the interval in time—less than a score of years—it witnessed a sea change so great that the whole world has felt its influence ever since. It saw the supremacy of the seas transferred from a Mediterranean to an Atlantic Power. The seed which Drake and Howard planted so gloriously at Gravelines bore its mature fruit not less gloriously at Trafalgar. The storm and stress of its early struggles for existence are among the noblest traditions of our race, but, though Nelson happily knew it not, *we* cannot be blind to the fact that its splendid fruitage at Trafalgar marked the close of the sailing-ship period of sea-fighting. The second great revolution was at hand and has now been accomplished—a reversion to mechanical methods of propulsion infinitely more powerful than those which sails superseded, but involving the extinction of sails as part of the equipment of a fighting man-of-war quite as inevitably as sails themselves involved the extinction of oars.

Now the line of reflection which I desire to suggest is, that this second great revolution is in its nature far more momentous than the first, and that, unless we take more thought than the Spaniard did, and take it betimes, it may perchance have consequences quite as unexpected and even more far-reaching. I have said that the advent of sails transferred the centre of naval gravity from the Mediterranean to the Atlantic. The advent of steam is not unlikely to transfer it to the far larger and more distant area of the seas which wash the shores of Asia, Africa, Australia, and America. "Westward the course of Empire takes its way," but since the earth is round, it must return to the East at last, and the dream of Columbus may yet come true, that the way to the Indies and Cathay is across the Atlantic. The advent of sails opened the gates of the Atlantic to the commerce and war-ships of the Mediterranean. The advent of steam has already opened the gates of the Indian Ocean through the Suez Canal, to the commerce and war-ships of the world, and it is certain sooner or later to open the gates of the Pacific across the American isthmus. It is true that the steamship is subject to certain limitations in regard to its effective range of action from which the sailing-ship was free—just as the galley itself had certain advantages over the sailing-ship—but these limitations are more than compensated by the speed and certainty of transit which belong to the steam-ship; while, so far as the disabilities of the steam-ship are inherent in its dependence on extraneous sources of propulsive power, they can be largely neutralised by forethought and organisation scientifically directed to that end. If then we may trust the teaching of Lepanto and Gravelines, it is not too hazardous to predict that the enlarged dominion of the seas will in the end belong to the Power which has best mastered the secret of the new era, which has best adapted the art and method of naval warfare, and, above all, the training of the fighting seaman—for, after all, war is essentially an affair of men, not of machines—to the vast changes which have brought us from the "Victory" to the "Formidable." Are we as well equipped to understand

and take advantage of the second revolution as Drake, Howard, and their comrades were to understand and take advantage of the first? They lived in a world of war, they were men of adventure and strenuous endeavour, buccaneers if you will, dare-devils most undoubtedly. The sailing-ship in their hands, incessantly at strife, unequal but nevertheless victorious, with the forces of Nature, moulded its crew by community of stern experience, by the constant pressure of comradeship in danger and conflict, to an organism unsurpassed for fighting at sea. They understood the secret of the sea as no men had ever understood it before; the occasion found them ready to take advantage of it, and the British Empire is the legacy of their understanding no less than of the valour it directed and informed. The valour is ours still, as sturdy as ever—the sturdiest in the world. But whether the understanding is mated with it in an association as close and vital as that which gave the old sea-dogs their strength is more than any man can tell until it is put to a proof as searching as theirs. The sea is once more propounding its riddle in new and strange language, never yet fully interpreted by war, to more nations of the earth than ever before sought or cared to read it. The dominion of the seas will, in the long run, assuredly be the prize of those who can read it aright and read it best. If that prize is not ours, "farewell might," as Raleigh said. But none can read it as yet, as Drake read it aforetime, by the light of experience and action. We must all read it as best we may by the light of hard thinking and patient reflection, and of rational practice founded on both. I am not speaking of theoretical studies, of which in these days we have perhaps rather too much than too little. That way disaster lies because it tends to divorce the seaman from the sea, and no sea-power was ever founded on that unholy separation. "Maritime skill is like skill of other kinds, not a thing to be cultivated by the way or at chance times; it is jealous of any other pursuit which distracts the mind for an instant from itself." The warning was never more needed than it is at the present time, when the problem is how to develop maritime skill out of conditions new to the sailor and never yet fully tested by war, how to mould the crew of a modern war-ship into as consummate a fighting organism as the crews which fought in sailing-ships from Gravelines to Trafalgar. The problem is not to be solved by rule of thumb, by tinkering here and there at a routine still saturated at every point with the tradition of masts and sails and their discipline. The rule of thumb has had its day. The command of the world's forces, of the forces of Nature and those of society alike, belongs henceforth to those who understand them best, and know how to direct them most skilfully, who have best learnt how to transform the power of knowledge into the power of action. It is a far cry perhaps from the discipline of masts and sails to the dominion of the seas; but history shows how deeply their association has affected the fortunes of the British race, and at least suggests that if their final divorce is at hand it cannot end in a mere dissolution of partnership. We have to find a new mate for the mistress of the seas—to wed her to the iron steam-ship as closely and as happily as she was wedded by our forefathers to

the wooden sailing-ship. Shall we seek what we have to find in the fruitful union of power with knowledge, or shall we content ourselves with a mere makeshift and barren alliance between routine and the rule of thumb?

P.S.—Since my paper was written I have had the advantage of reading a vigorous reply to Sir Gerard Noel, contributed by Rear-Admiral FitzGerald to the June number of the *National Review*, and a powerful argument on the other side of the question which appears in the new volume of the *Naval Annual* from an anonymous pen, declared by the editor and attested by internal evidence to be that of "a writer of the highest competence." It would be disrespectful to these two high authorities to attempt to deal with their views in the brief space and time remaining at my disposal; but I may say that, in my judgment, there is much that is well worth attention in what is advanced by both. I must add, however, that there are some things in the gallant admiral's article with which I cannot agree at all. Whether anything that I have said will in any way abate his rather boisterous dogmatism I cannot tell. I am afraid not. He knows his own mind; I do not pretend to know mine, and should not presume to tell it here if I did. I am a mere seeker after the truth. He professes to have found it, and propounds it with a downright conviction, which, to my poor, hesitating mind, seems here and there to be rather out of proportion to the weight and cogency of his arguments. Nevertheless, it consoles me to find that his main conclusion is identical with my own. Whether masts and sails ought henceforth to be retained or not I do not know. I can only say that I have seen no argument as yet to convince me that they ought not. Rear-Admiral FitzGerald does know, however. "It ought," he says, "to be obvious to all unprejudiced minds" that they must go. Be it so. I have no prejudice in the matter except a prejudice in favour of thinking a thing thoroughly and patiently out before assuming that all who differ from me are prejudiced. But what then? Rear-Admiral FitzGerald is entirely at one with me in insisting that the whole question of naval training ought to be reconsidered; nay, he even goes further, and says that the whole system must be recast. "That a complete revolution in our training service," he says, "from the day the boys are first entered from the shore is absolutely necessary I have no doubt; that is to say, if we are to keep pace with the times and not see ourselves surpassed by other and more intelligent nations while we are crying over spilt milk." That is exactly the moral of my paper. I want to see the whole question thoroughly and patiently thought out. I will concede nothing whatever to prejudice, and very little, if anything, to sentiment and tradition. If, after a full hearing, masts and sails are found to be condemned by right reason and the mature sense of the Service, I will not lift a finger to save them. But the matter cannot end with a mere delivery of the verdict on the particular issue raised. Whatever the verdict may be, the revolution of which Rear-Admiral FitzGerald speaks is at hand, and we must meet it with intelligence, forethought, and courage. The result of the recent discussion may not be to save the discipline of masts and sails from extinction.

I do not even know that I ought to wish that it should. But I shall never regret my share in it if it should have the effect of opening the eyes of the Service at large to the momentous issues involved and to the vital interests at stake.

Admiral the Right Hon. Sir JOHN C. DALRYMPLE-HAY, Bart., K.C.B., LL.D., F.R.S. :—I am rather ashamed to intrude so early in this discussion, but I certainly desire to thank Mr. Thursfield for the information which he has given us, and for the candid and excellent spirit in which the lecture has been framed. I am aware that ten minutes is all that ought to be permitted to any of us who may desire to speak, and I will endeavour to compress my observations into as small a compass as possible. First of all, I want to say that I agree that it is certain that the most vital element of the old method of discipline under masts and sails has vanished altogether from the ships of the future. I admit that we cannot put masts and sails into our ironclads. I also agree with the statement made that the "Self-reliance and resource, quickness of eye and steadiness of nerve, calmness and self-possession in emergency, steadfastness in danger, helpfulness in all difficulties, and a quick sense of comradeship" are the qualities which it is desirable to get out of our seamen, or, rather, to get into them. I do not for a moment doubt that masts and sails have been the best training for our men in the past, but having said you cannot put them into men-of-war of the present day, because you would make the men-of-war inefficient if you did, I do not at all admit that it is entirely impossible to train our seamen without the discipline of masts and sails. I am going to take only a very small corner of this great subject, so that I may not occupy too long. We must remember that the mercantile navy and the Royal Navy are, at the present time, in a very different condition as regards masts and sails. We have at this moment 2,200,000 tons of British merchant-ships, without reckoning the ships of India and the Colonies, propelled by sails alone. Many of these ships are of very large size, many of them making very long voyages. The latest returns available embodying statistics are to be found in the publication for 1897, which I got from the Board of Trade for the purpose. By this return these sailing-ships in 1891 had on board 52,569 sailors, of whom 43,257 were British only, and 9,312 were foreign. In 1896 the proportion of foreigners had increased, for against 35,825 sailors of British origin there were 9,668 foreigners. That is from the last return. It is interesting to note that those foreigners who were being taught seamanship by mast and sail drill comprised the following: 5,219 Swedes, 5,107 Germans, 3,669 Norwegians, 2,222 from the United States of America, 1,962 Russians, 1,518 Danes, 1,010 Dutch, 885 Italians, and 824 French. Therefore those 9,668 foreigners are learning mast and sail discipline and drill which, I think, might be much more usefully bestowed upon British subjects. I say nothing now about the unemployed in this country, and the disadvantage of employing so many foreigners, but I am speaking of the real advantage of using our mercantile navy, which is entirely propelled by sail, for the purpose of training our naval seamen. I do not speak of the Naval Reserve, but of those boys who are educated for the Navy, and whose services as men have recently been so splendid. I should propose, however—and I have gone through the figures as carefully as I can, though they are subject to correction—that if we were to enter 3,000 additional boys to the number whom we now enter to be trained in the training-ships, we could increase the numbers of seamen sufficiently to supply our mercantile marine with trained seamen, from the ages of 21 to 25, 3,000 men in each year, who would displace the foreign element, and be lent to the merchant service for the purpose of giving them the advantage of a long voyage and mast and sail drill. Their pay would be paid by the shipowner, as the Naval Reserve men are now paid. A question touching the shipowner would arise as to the additional cost of these men. This could be met by a retaining fee of a similar amount to that given to the Naval

Reserve to retain the services of the men who were actually members of the Navy, but who were lent to the merchant navy of this country for the double purpose of instruction and of service. Three thousand men being lent in each year for four years' service, by the end of 1905, supposing it to be adopted in 1901, if the Board of Trade and the Admiralty were to agree upon it, 12,000 seamen would always be found in our merchant service, and would thus eventually displace the foreign element in the whole of it. A sea training would be obtained of a character which could not be afforded otherwise, and the result would be great benefit to the mercantile marine, to the Royal Navy, and to the country. These men, like those of the Naval Reserve, when their ships returned to England, would undergo the necessary month or two months of drill which the Naval Reserve now do, and this would preserve them in touch with the Navy; but the men so lent should continue their service in the mercantile navy or be replaced by others. In that way you would improve the mercantile marine vastly, you would cause no loss to the shipowner, and you would obtain great gain to the country and the Navy by affording the necessary means of obtaining mast and sail drill. By that means also a very considerable proportion of those men who have been originally trained in our training-brigs would continue their practice aloft, being associated not as single individuals, but as groups of men able to work together, with proper petty officers and persons to manage and control them. No group of men lent should be less than ten, with a petty officer responsible to the master of the merchant-ship and to the naval officer in command of Reserves. I venture to make that suggestion, Sir, in the short space of time allotted to me, as I am anxious to put it forward before my gallant friends here, who know a great deal more about the subject than I do, and to express my high opinion of the paper given us by Mr. Thursfield. Some of the speakers may, perhaps, tell me that my proposal is inadmissible.

Admiral Sir MICHAEL CULME-SEYMOUR, Bart., G.C.B., A.D.C. (Commander-in-Chief at Portsmouth):—I think, Sir, we must all thank Mr. Thursfield for bringing this subject before us, and I congratulate him on the literary ability with which his paper is drawn up. He professed to hold an even balance between the two parties, but I think everybody who heard his paper will be of opinion that he has shown a very strong bias in favour of masts and sails. He even said that it was the natural way to begin to train men in the modern ships. Surely, the natural way to train men is to train them in the ship in which they are going to serve. I speak thus early because I have to get back to my duties at Portsmouth, and I wished to speak because I am one of the old officers. I have had over 50 years of the Service, and I was brought up to masts and sails all my life. I served four years in two sailing line-of-battle ships, two years in each, and made long voyages in them between China and England. All my commands have been in masted ships, I have loved the sea, and I am devoted to sail drill and sailing-ships. But the conviction has forced itself upon me—much against my will—that masts and sails are gone for ever. The world goes round; and it will go round: you cannot stop it. The Navy has got to go with it; and, much as we regret it, it is certain we shall never see masts and sails again. If the contention of the advocates of masts and sails has anything in it, it means that the men of these days who are not trained under masts and sails are worse than the men of the old days who were. There is no middle course—either they are better or they are worse. I think, taking them all round, that the men of the present day are better. I will tell you why I say so. I have watched them as a captain when in command of masted ships, of the "Volage," the "Monarch," the "Temeraire," and I think it will be acknowledged by my contemporaries that they were fairly smart ships. The first unmasted ship I was in was one in the Channel Squadron, the "Camperdown," and afterwards the "Ramillies." The crew of the "Ramillies" were the smallest crew physically I have ever seen. I can only say my experience in the "Camperdown" and the "Ramillies" was that the crews were as good; the discipline, the readiness, the

resource, and all the qualities which Mr. Thursfield has quoted, were every bit as good as that of the crews of masted ships that I have been in—as good as that of the crews of the old sailing-ships. That is my experience; you will take it for what it is worth. I ask some of the old officers here to cast their minds back to the days of the Crimea. In that day the Mediterranean Squadron was composed almost entirely of sailing-ships. The crews were the pick of the Navy at that time, and the Naval Brigade was the pick of these crews. We know what the Naval Brigade did there. Just look at the Naval Brigade now, which was landed in South Africa, and what it has done both inside and outside Ladysmith. It was a young crew, taken from among men who have had practically no drilling in masts and sails at all, for you cannot call six months as an ordinary seaman in a steamer with masts and sails a mast and sail training. Yet nobody, I take it, is going to tell me that the Naval Brigade in South Africa was a bit worse than the seamen in the Crimea or India. I have seen many of the officers who have come from South Africa, who served both inside and outside Ladysmith, and we have seen plenty of letters from there, from which it is evident that those men were every bit as good as was the Navy in its best days. I do not say that the training of the Navy now is perfect. I have no doubt that the training of boys may be improved; but if the training under masts and sails is to be of any good you must carry it to its logical conclusion, as was proposed by the late Sir Geoffrey Hornby. We must all respect the memory and the opinions of Sir Geoffrey Hornby. What was his opinion? It was that you should have pure sailing-ships manned by the Navy, to take the whole of your stores to foreign stations—the Pacific, the East Indies, the Cape, and so on—and that men should serve in them for two years. Well, I cannot think that the Admiralty are prepared to resuscitate that sort of thing, to build a dozen ships, pure sailing-ships, for this purpose. I do not say that if you get a man who has been an upper-yard man in a sailing-ship for a couple of years he is not a first-rate man at anything. No doubt he is, and it does him good. But supposing for a moment that these ships are good, that the training is good: where are you going to get the officers to command them? I do not think I am libelling the list of captains when I say that there are few men who would take a pure, heavily masted sailing-ship and be equal to the responsibility of commanding her at the present day. But if you do find a few men capable, where are the officers of the watch? Where are the officers that you can put on deck, and then feel that you can sleep comfortably when it is blowing and you are carrying on at night? It has been stated in correspondence on the subject that the last two sailing training-ships—the "Eurydice" and the "Atalanta"—were both lost. I blame no one, but you cannot get away from the fact. Do you think the Admiralty are going to take the responsibility of fitting out other ships of that sort? At the present moment the under-masted brigs are not allowed to go to sea at night: they will not let them out at night. I think masts and sails have gone for ever, I can come to no other conclusion. There are one or two statements which the lecturer brought forward which I should like to say a word or two about. There was a good deal interpolated in the lecture about officers. I thought this was to be a lecture on the training of seamen. At any rate, I suppose we must confine the discussion to that, and not include officers. If we are going into the training of officers that will prove to be a big subject. I am bound to admit that the Training Squadron does a good deal of good to young officers. I have always said that; but it does not do any good to the men. Now, it was stated, I think, by the lecturer, that he was told by an officer on Whale Island that 42 per cent. of the men who come forward to qualify as gunnery instructors and captains of guns pass through the Training Squadron, and that the proper proportion would be 30 per cent. Anybody who knows about the subject at all is aware that the number of men who have been at Whale Island and have passed through from the Training Squadron may be any number. It is accidental, there may be 100 per cent., or none at all. It was cited, I think, to show that because a man had been an ordinary seaman

for six months in one of these steamers with masts, therefore years after as a petty officer he was picked out to be a gunnery instructor. I asked Captain May of the Gunnery School about it, and he roared with laughter. I hope Mr. Thursfield will forgive me, but I can only say that I think it is absurd that a man, because he has been six months as an ordinary seaman in a Training Squadron, should for that reason be selected as gunnery instructor years afterwards. It is really too obsurd. I think it was said also that the petty officer of the present day is not as good as he was in the old days. I am not brought very much into relationship with petty officers just now, having arrived nearly at the top of the list, but I have had conversations with officers on the subject. I do not think they are as good, but the reason is not because they have not been brought up to masts and sails, it is because of late years you have increased your Navy by thousands, and you have increased it by entering boys at the bottom of it. Therefore there is enormous promotion, and you have to put forward young men, and men who are not quite thoroughly qualified, as petty officers. I was in the Mediterranean, and at that time they were increasing the Navy enormously. They sent out to me 500 ordinary seamen and boys, and told me to send home a couple of hundred men fit to rate as petty officers. It is very important for young men to be pushed on, and I do not object to it at all; but it is quite certain that when you are increasing the Navy like that, the men cannot have the experience which is possessed by men who have served longer. I have no doubt that this will be a very amusing and instructive discussion, but I look upon it as the last dying gasp of the advocates of sails. I think that whatever we may hear in this room—we shall hear observations from many officers who have served in a Training Squadron who will give us their experience—we shall not hear it is no good at all. If they said it was no good it would mean that they had not dealt with it properly. There is here a distinguished officer who will give us his experience. Of course officers drill their men and delight in it. I delight in it, and always have. Some officers think that because all these men move smartly about, this moving does them a great deal of good. But in these modern ships you will find men move every bit as quickly. Officers should board some of these ships, and see men move. ("They get fat.") Yes, they do get fat, some of them, but I saw a man weighing about 20 stone win the Veterans' Race at Portsmouth last year. I thank you very much for your attention.

Admiral Sir NATHANIEL BOWDEN-SMITH, K.C.B. (Commander-in-Chief at the Nore):—I am sure most of my brother officers will agree with me in saying that no apologies are needed from Mr. Thursfield as to reading this paper at the United Service Institution, for there are few people outside the Service better qualified to give an opinion on the training of seamen. He has, I believe, taken part in more naval manœuvres than any other man, and in that way has seen much of the actual working of the British Navy. Like the gallant officer who has just spoken, I also have served in two sailing-ships, and considering that he has commanded with great success both the Channel and Mediterranean Fleet, his remarks should command every attention. I have, of course, read the various letters which have appeared in the *Times* on this subject, as well as in Sir Gerard Noel's pamphlet, which he was good enough to send me, and also Rear-Admiral FitzGerald's reply, and I have no hesitation in saying that I entirely agree with the latter in thinking seamen ought to be trained in the ships in which they will have to fight. But because some of us are not in favour of masted ships, there is no reason why we should not have one or more Training Squadrons composed of modern ships, and, when at anchor, exercises in boats under oars and sails should be frequently carried out. The lecturer has touched upon the subject of handling of boats, and it is well known that men-of-war's men are, as a rule, the worst boat sailors in the world; and I was informed last autumn by some of the captains who had taken part in the manœuvres that some of them now could not pull an oar, having had no opportunity since leaving the training-ship. This is not

creditable to us, and should be looked to, for though steam-boats are properly used for post-office work, landing officers, etc., there is no reason why pulling and boat-sailing should not be systematically taught. The fact is, we devote so much of the day to company and battalion drill, and to cutlass drill, which is obsolete, that we leave ourselves little time to teach the men to be sailors. The first thing to be taught is good shooting, both with rifles and big guns, and I do not see how this can be so well taught in obsolete ships as it can be in modern vessels armed with the same guns as would be used in action. The lecturer treats of the question of training seamen as though they were the only people to be considered in a modern fighting-ship, whereas the engine-room staff are amongst the most important ratings, and I do not see how you can consider the training of seamen apart from the rest of the ship's company. As I understand Sir Gerard Noel, and the school which he represents, he would have two or more Training Squadrons of masted ships fitted with screws and engines, and therefore requiring a certain number of stokers. On an emergency arising, these are all to be turned over suddenly to modern ships, so that the engine-room ratings would find themselves under new conditions, having to contend with water-tube boilers and steam at 300 lbs. pressure, with all its results. The consequence will be a break-down in the engine-room, and then what will be the use of the gunners, even though they should shoot better than other men trained in modern ships, which I very much doubt? In advocating such a system, I fancy my friend Sir Gerard Noel can hardly realise the somewhat bitter experience we are undergoing at present with the boilers and machinery of some of our ships. No, if we are to have masted training-ships, I hope they will be *bonâ fide* sailing-ships without screws, so that whilst training the seamen we shall not demoralise the stokers. I can hardly fancy any man being bold enough to advocate spending large sums of money in masted training-ships which are useless in war-time, whereas a Training Squadron of modern ships is a source of strength to the Empire. With a little change in the crew such a squadron is ready to reinforce any other fleet or station which may require assistance, and by keeping up one or more such squadrons we might possibly reduce the number of sloops and gun-vessels serving on foreign stations, which are useless for fighting purposes, and which do not afford the best sort of training for officers and men. This clinging to masts and yards leads us also into other errors. We are at the present moment building and fitting out some ten or a dozen sloops with single screws and an extreme speed of 13 knots, and all for the pleasure of putting masts and yards into them as playthings for the crews, whereas the twin-screw sloops of the same draught of water (13 feet) and without sails are infinitely superior both in appearance and as fighting-ships. Although I have spent many happy days under sail, I feel that the days of sail in vessels of war are past, and we must seek to exercise the men in other ways. A gymnasium and swimming bath at each important naval depôt seem to me to be a necessity which ought not to be delayed. In conclusion, I may say that, although I regret the necessity, I was glad personally when the exigencies of the Service compelled us to lay up those masted ships, which, I hope, for the good of the Service, and for the welfare of the country, will never be revived.

Rear-Admiral Sir GERARD H. U. NOEL, K.C.M.G. (Admiral Superintendent of Naval Reserves) :—I wish to express my sincere thanks to the lecturer for his excellent, interesting, and most valuable paper, with every word of which I most cordially agree. It has been said that masts and sails are the Greek and Latin of a liberal education. I fully concur. As I went to sea at the age of 13, I received no classical education, and consequently all through my life I have found the greatest difficulty in expressing my thoughts adequately in words. I think this is not uncommon with naval officers, and that is why many of us are reticent. But other officers, though they may not be particularly well educated, do make their voices heard. I have often found that officers, when they get a question which they either do not trouble themselves to understand, or find

a little difficulty about, finish the argument with these abrupt words, "It is al d——d rot!" The other day I wrote a crude paper, saying what I thought about seamanship training; and, if I may be allowed to say so, the lecturer has added to that paper the arguments I should have liked to have used myself. He, as a man of letters, has treated the subject from a literary and historic standpoint. I congratulate Mr. Thursfield on the way in which he has dealt with this important subject. His paper is full of powerful and convincing arguments, though I am afraid he cannot hope to convince some of the officers who are here. As Captain Mahan has brought the world to understand the value of sea-power, so I hope and trust it will be the privilege of Mr. Thursfield to bring the Navy and the nation to understand the secrets of the training whereby alone a *seaman* can be made. I placed my views on record in the *United Service Magazine* of April, 1900, and adhere to every word in that article. I do not believe I am badly supported by the Navy. We do not hear their voices, but there are many thinking men who are entirely with us; and I believe that after this lecture there will be more of these thinking men with us. Two papers have been written on the other side of the question—I do not see the writers of either of them here. I should like to have seen Rear-Admiral FitzGerald here to-day. Why is he absent? What do these writers propose, and what do the two officers who have just spoken propose in the place of seamanship? Absolutely *nothing*. In the two papers referred to after reading them carefully, I find the doom of the executive. We are told that we are to become engineers. I do not say that we shall not, but I will refer to that presently. I honestly believe that in the Service afloat—and I am sure it is so in the Mediterranean, where I have just come from—most of the captains are beginning to find that their officers are not what they ought to be, simply because they are not seamen; and we have had less and less opportunity during the last few years of making them seamen. I believe, too, that the officers themselves are very anxious about this question, lest they should not be allowed to become *seamen*. Both officers and men wish to be seamen and to have a thorough knowledge of what the sea is. And here I would like to say that masts and sails on which the opponents to seamanship training lay so much stress, are only a very small portion of what I am trying to show is necessary. Masts and sails take us to sea, and we learn thereby what the sea is like. As I said in my paper, we should know the sea as the Boers know their country. We do not know the sea, and we are the losers by it. There are many talented officers who ignore the necessity of seamanship training, and those talented officers have devoted their lives to the scientific portions of the Service. All honour and credit to them! They have done immense things for us in gunnery, in torpedoes, in shipbuilding and designs, and in other ways; but they are not the men whose opinion is most valuable on the subject of how best to teach the officers and men to fight their ships at sea. Then another voice which we hear is that of those who pose as being in advance of the age. Now, these are the people I do not like. It is not only in the Service—indeed, it is not often in the Service—we hear this voice, but outside the Service. I looked at a Service paper the other day, and I saw an article in which a writer airily wiped away the Training Squadron, and then proceeded to question whether the men's time should be taken up in cleaning their guns. A seaman not to clean his gun! I am sorry to say there was a well-known writer's name to that article. Much has been said about the necessity of training our people as engineers. Ask my midshipmen whether they were not more in the engine-room than any others in the squadron. I think they would say they were. What is an engineer? He is an ingenious man who has acquired the power of utilising the forces of Nature, and, by mechanical appliances, bending them to his will. I say that engineering is not a new science. Four thousand years ago one of the greatest engineers the world ever saw built the great pyramid. Hannibal and Napoleon were amongst the greatest engineers in the world. The executive of the Navy are all engineers in the sense that the Royal Engineers are engineers. Now, engineering is divided into many branches. The marine engineer, who

designs and makes the marine engine, is one of the highest classes of engineers. The engineer officers in the Service have to keep those engines in order and work them efficiently; but the place that some few of these officers are trying to assume is fictitious. The executive are engineers in the broad sense of the term. I say that training at sea in masted ships is nothing more nor less than training in engineering. We are brought up to understand what a gun is, and what a torpedo is, and our torpedo instructors and our gunnery instructors, and the people who have to manipulate the guns are all the better for their teaching at sea in masted ships. This question of seamanship training is, to me, a most acute one. If masts and sails are doomed, I say it will be a poor day for the British Navy. I do not think they will be condemned so quickly abroad. In conclusion, I pray Heaven that if ever I have to serve in the Fleet before the enemy, I may have some *seamen* under me.

Captain GEORGE L. ATKINSON, R.N., A.D.C. (Captain of Dockyard Reserve, Chatham):—I may perhaps be pardoned for giving an opinion, since for two-and-a-half years I had the honour to command the Training Squadron, and, therefore, I have had some very practical experience. I joined the squadron with a feeling that the command was an important one, and that it was good work. I left it feeling that I had under-rated the good it did:—Firstly, to the lieutenants and sub-lieutenants, who, in many cases, learned for the first time how to handle the men, and to keep their weather eye open in a way they had never done before; for my observation of them led me to the conclusion that want of observation was their weak point. I have commanded a battle-ship, and there the officer of the watch did not see his men, and had no opportunity of handling them. Secondly, the midshipmen learned their work, and, after their shyness had worn off, took a liking and pride in it, which many of them told me was a great benefit to them, because they had learned so much. They joined with a dread of the squadron, they left it with regret. Several of them have more than once said to me how grateful they were that they had been appointed to the Training Squadron, although at first they were very averse to coming to it. Thirdly, the seamen were at first ignorant of the ropes they had to man and the work they had to do. We had great difficulties with them, and we had to go under easy sail at first. But in quite a short time they took to it, and in most cases became smart young men, and learned how to move quickly on receiving an order, a thing which officers have found has died out of late. It is not their fault; it is simply that in the modern battle-ship the duties are so much divided that the men seldom work together. Before starting every cruise, it was the custom to weigh and to measure them, and at the end of the cruise the same thing was done, and the report sent to the Admiralty. The result was invariably to show a marked increase in their weight and in their chest measurement. With few exceptions they showed a marked improvement in their physique, in their general appearance, and their sailorlike qualities and self-reliance. As I am addressing sailors, you will all know what that means. I found it was a mistake to cruise in hot parts, because when we did so the men lost not only in condition, but in energy, and I advocated cruising, for choice, in the latitude of the Canary Islands, and to the north of them. The result of that training was excellent. After one winter's cruise, when the Canary Islands and Vigo were the headquarters of the squadron, I returned to England after five months, with men who could do anything. During this cruise, tube-cannon firing was exercised twice a week, and I venture to think the gunnery schools had some very well trained youngsters sent to them to qualify as seaman gunners. Perhaps some of these are the gunnery instructors referred to by Mr. Thursfield, and the ships went quite fast enough to enable the guns with their slow-training gear to be kept on the target. Through no fault of the Service, but because modern battle-ships are too costly to keep long at sea, and the modern cruisers must travel fast for the training of the stokers, it is now quite the exception for vessels

of H.M. Navy to remain more than a few days at sea, therefore, the officers and men can get very little sea training. To become a seaman you must serve at sea, and I venture to ask how are the young officers and young seamen to become sailors if they do not have more sea training than it is possible to give them in these modern ships? I think the present Training Squadron, as now constituted, is an excellent up-to-date squadron, but it is no more a Training Squadron than the Channel Fleet. It is a squadron I should have been glad to have my old ships turned over to on the outbreak of a war, for fighting purposes, and have been proud to command, but as a nursery for seamen I fear it is hardly what we want. Our Navy has become so large that the old squadron of four ships is not sufficient for the purpose which it very well served five or six years ago, and, unless increased, it is not much use to continue it; but if the training is considered valuable—and that is my experience—it should be doubled, or trebled if necessary This leads to the question of ways and means. The "Active," "Volage," and "C" class corvettes are suitable ships for the purpose, and if there are not enough, it will be necessary to build ships on purpose. I can imagine some officers saying "What waste of money!" but if it is decided that training in masted ships is the best training, then I think that no money can be better spent than in building ships for the purpose of making the *personnel* of the Navy efficient. We have the experience of the past, and it has been highly satisfactory; but if this training is to be given up, I ask those who advocate doing away with it, What is to take its place? I may say that everybody who has yet spoken, except Admiral Noel, has ignored the fact that we are living on the past. We have had a squadron, and, although it was a small squadron, it served its day. We have doubled the Navy, and now the time has come to double the squadron. Something must take the place of the masts and sails if that is to be given up, something that we have not got. What is it to be? Bar-bell musical drill is all very well in its way; so are gymnastics; so are boat-pulling and boat-sailing. But will these suffice? I ask the question because I do not think that training will suffice. A gallant admiral, who has served continuously, and always with great success, thinks the days of masts and yards training have gone by the board. And his opinion is a very strong one. But in his letter to the *Times* he suggested that real sailing-ships, able to claw off a lee shore, should be the training of the future, if any, in masted ships. He said at the same time that he did not believe in masted sailing-ships at all. Now, I am addressing naval officers who know perfectly well that junior officers and young seamen do not care a fig about lee shores. They are not responsible, and therefore they "turn in," trusting to their superior officers to keep them off the lee shore. It seems to me that vessels which can claw off lee shores without the aid of steam will teach senior officers rather than youngsters; but it is the masted ship with sails that we want, not so much to teach seamanship as it was known to our fathers, but to make officers observant and self-reliant, by keeping the sea under sail, and the seamen as handy men as they are at present. It is a means to an end simply, and nothing more. When such training for officers is followed by a turn in the torpedo-boats and destroyer flotilla, I can think of nothing better calculated to make a really good up-to-date naval officer. I have no doubt in a less degree the seamen will receive a good training by this means, but owing to the small number carried by these vessels, only a few can receive the benefit. If the training in masted ships is determined upon, it would be well to carry it out systematically and as soon as possible after the boys leave the training-brigs, where they get their first experience in a ship under way. The time under instruction in the squadron will be governed by the exigencies of the Service; the longer the better, and not less than about six months. Having completed their training in the squadron, they will probably never see a mast or sail again; but after they have completed their gunnery training which follows, I venture to assert that they will be very different from the marine who has been brought up from a bugler boy, when both are placed behind a gun to shoot at a moving target

from a moving platform. They will be quicker and make better shooting, which, after all, is the end and aim of all our training. If all mast and sail training is done away with, then the training of the seaman boy must gradually become more and more like that of the marine bugler boy. Is this training good enough? I do not think it is when I see both men working their guns, and I find that officers of commander's rank usually agree with me.

Admiral Sir JOHN O. HOPKINS, G.C.B. (late Commander-in-Chief in the Mediterranean):—I came purposely to hear this lecture, not intending to make any remarks, but as one of those who have been mixed up with the correspondence on training, I dare say it will not be out of place if I give a few of my views in connection with it. Mr. Thursfield's paper was an excellent one to promote discussion, though, like the prophet of old, he came to curse but remained to bless masts and yards. Perhaps that is natural, as probably he had a little bias that way which showed itself in his paper. But if he had, it is all the easier for those who advocate masts and yards to follow in his wake. The question of masts and yards, as Admiral Noel rightly says, is not altogether one of primary importance, the important point is keeping the sea, and on that platform we all agree. All thinking men believe that experience at sea and "seagoing" is of primary importance. I will mention a case which occurred latterly. "Salt Water" mentioned it in the *Times*. The Mediterranean Squadron, at the rate at which they are cruising, will be three solid weeks at sea in six months. That is an instance of what we do not want. This is slurring over the sea work they ought to be doing, to put it in plain language. To make seamen is to make the seaman's home the ocean. He ought to be moving about it. I heard one man remark to-day, "It is very expensive to move these battle-ships about at high speed." But what do you want to go at high speed for? You may go at six knots an hour for six months, and you may be doing something useful during the whole of that six months. Masts and yards will die a natural death, and though some of us are very grieved over their burial, such as Admiral Noel, nevertheless that death is bound to take place. The more your Navy increases, the less chance will there be of your finding sufficient masted ships for training your men in, and the less chance will there be of the Admiralty passing the enormous expenditure for building a lot of sailing-ships for training purposes only. I heard Captain Atkinson say that midshipmen had to be taught the ropes. Are there not many captains in the Service who would require to be taught the ropes? Yet people say that these vessels, these masted vessels, which are intended to be kept moving about, are going to restore the art of seamanship. I admit that if you keep the ocean in vessels with masts and sails, with the important provision that there is no limit to expenditure in building them, you may produce some results; but they will be small results, not great ones. You may have a large number of men in the Service moving about the ocean to obtain that readiness of resource, and all the other attributes which belong to the sailor, as quoted in the *Times*; but is the game worth the candle if these qualities are just as readily acquired by the men being kept at sea and trained at sea in the present ships? Masts and yards alone do not teach fertility of resource. In the old vessels you might be caught in half a gale of wind and have to struggle through with it as best you could, but what the advocates of masts and yards will say now is: "The weather is bad; furl sails, steam through it, and when we get to the other side of the storm we will set sail again." There is a good deal of that sort of sailoring going on. There will be a good deal more of it if this condition of training in masted steamers continues. Though we may be very sorry to see the decadence of masts and yards, I think that we must gracefully let them go and find some other means. Many of the speakers say: "What are the means?" Now this is between ourselves, although probably it will go forth to the public. We have very much neglected the art of gunnery. In our future wars the "man behind the gun" is the man who will decide the fight, whether the vessel in which he has been trained has had yards or not. Therefore I think if anybody

wishes to strike out a new line in the training direction, he cannot do better than take up the gunnery side. It is that which has been too much neglected in the past. If all the attention which has been turned to masts and yards had been directed to the question of gunnery, we should have had a better result than we see at present. I have myself been in two Training Squadrons. In the first I was with the late Admiral Hornby, and we had a very rough time of it. As the boatswain of the "Pearl" put it, we were dragged round the Horn by the hair of our heads. We did not at the end come out of that weighing more than when we started, as Captain Atkinson's men did; we were all thinner, leaner, lighter, and indeed very much like the Ladysmith heroes. We hear of the deterioration of seamen and petty officers. I do not believe it to be so. I maintain that if you take 1,000 seamen now, haphazard, as you might take 1,000 in the old days, you will find as good an article in them as you did amongst those in the days gone by—in fact, a better article: he is a more sober man. And in many ways he is more vigilant and more conscientious—although many of us, I am afraid, had no consciences in the old days—and if he has a good conscience he will do better work. I think there are higher attributes to be found in the seamen of the present day than were found in those of old times. As regards petty officers, there is no time to deal with that now. Sir Michael Culme-Seymour said this afternoon that an increase in the Navy is followed by the Admiralty demanding men from the squadrons to convert into petty officers. This is quite true, because petty officers we must have in proper proportion. But with the increase of the fleet, and the great increase of petty officers, there cannot be the same length of sea experience; but this will rectify itself in time. As regards scientific training, we may look for much also in that direction. The officers learn a smattering of engine work, but they should be in a position to take their place as engineers if called upon. I remember what the Khedive of Egypt did when he was bothered by his engine drivers for more money. He said: "Very well, I will give you increased pay, but you must have on your engines a native stoker to help stoke and drive the engine." The native stoker accordingly came, and helped the driver. But by-and-bye he became qualified to drive the engine himself. That was the Khedive's chance, and on the next occasion of a further demand by the engine drivers he said, "Be off out of it, the stoker will drive the engine in future." Let us take this lead and try and know as much engine driving as engineers. Another point is (perhaps foreign to this discussion): Why should not these engineers have executive rank? It is merely taking command of a certain number of their men, which at present they do as much as any so-called executive. Then why not call them executives as, of course, they play a very important part in a ship? If it pleases them to be called executives, and we get better work out of them in consequence of calling them so, and they achieve, as they think, a better position, it will hurt nobody and will content them. There is one great consolation in this discussion as to training—we are all very much on the same platform as to what we want. We want a good gunner, we want a self-reliant man, a man up to every emergency: we want a "handy man," a man who is good afloat, and we want the best man all round. The only question is, whether if we go on training in the usual service groove, without falling back on masts and yards, we shall get as good a man as a paltry training with masts and yards will give us. I think we shall, and I think the whole Service may be satisfied in feeling that if we only go on training as we do, we shall obtain the type required. One officer remarked to-day the men learn to run when trained in a masted ship. This is rather far-fetched, as if you want a man to run, make him run; if you want a man to be active, make him active. In conclusion, I may tell the civilian part of this audience that if you want to see a ship in tip-top order, where the men are self-reliant, where the last ounce may be got out of them, where the fighting properties of the ship are admirable, where any officer would be proud to take that ship into action, and give the best account of himself in a fight, look at one of our modern

ships, and its crew, who have been some time together under good officers, and then try and realise that this bright picture is composed of elements of whom probably not one-tenth have ever been shipmates with masts or yards.

Vice-Admiral Sir CYPRIAN A. G. BRIDGE, K.C.B. (late Commander-in-Chief on the Australian Station):—I will begin by saying that, though I fully associate myself with all the compliments which have been paid by previous speakers to the lecturer, in order to keep within the regulated ten minutes I will not attempt to put my sentiments into words, except to say that the lecture has given me as great pleasure as it has anyone else present. In the first place, I should like, as one of the "Middle-of-the-road" adherents of that school of which Admiral Sir Gerard Noel is an eminent exponent, to clear our side from two accusations or suspicions which have been brought against us. One is that we are prompted to maintain our approval of the old mast and sail training by mere sentimental feeling. I do not know whether Sir Gerard Noel will allow himself to be considered a representative of the sentimental class. I can say for the rest of us, and probably for him, too, that we are a long way past the age of sentiment. I doubt whether there is much sentiment left in a man after he has been for a year or two first lieutenant of a ship. In advocating the retention of the old system of training, we are not doing so from sentiment. Another point is that we are sincerely looking for information when we ask what is to be put in the place of the old training. Captain Atkinson asked that question just now, and he is, like the rest of us, still awaiting an answer from those who have already spoken. There has, however, been an answer given to it, I think, in the postscript of Mr. Thursfield's paper. It alluded to an article in the *National Review* by Admiral FitzGerald, whose absence, and particularly the cause [1] of that absence, I am sure all of us regret very much indeed. In order not to misrepresent him, I will use his own words. He says:—"We hold that the men should be trained in the very ships and with the very weapons which they are likely to use when called upon to fight the battles of their country." Now, that is exactly what they are not trained with, and what they have not been trained with in recent times, even those who have not had the good or bad fortune to go through the masted Training Squadron. It is a commonplace of naval discussion that there has been of late years a tremendous and rapid change in naval material, which is still proceeding. What were the ships even a dozen years ago, when some of us now on the flag list and on the captains' list were lieutenants? What sort of ships were they? Were they like the most recent form of fighting-ship? Surely the "Hercules," or the "Sultan," or the "Minotaur" are just as practically obsolete, when compared with the "Ramillies," or the "Renown," or the "Royal Sovereign," or the "Majestic," or the "Magnificent," as the "Queen" of "Billy" Parker's time, or as the "Prince Regent," or even the "Marlborough," of "Fly" Martin's. And yet nearly every officer in the Service who is more than half-way up the list of lieutenants went through the whole of his training period in ships of that kind. Therefore, they have not been trained, and there is no effort made to train them in only the latest ships. Much of their gunnery training was with the old muzzle-loading weapons. This appears to be the case everywhere. And it is a practical admission of the truth of the statement that it is impossible, and, perhaps, also is considered unnecessary by those who are against mast and sail training, to try to train our officers and men in the "very ships and with the very weapons" that they are to use. That is shown by the fact that nearly the whole of the gunnery training, and a great deal of the other training, take place in harbour or on shore. Suppose the lecturer, with his unsurpassed power of lucid explanation of naval matters, were to visit one of our great naval training establishments, he would see that immense trouble and ingenuity and vast sums of money had been expended in building up on

[1] It was stated at the moment that the Admiral's absence was due to indisposition.—C.A.G.B.

shore imitations of the weapons and equipment which are used afloat. Is that training men in the "very ships and with the very weapons" with which they are to fight the battles of the future? Are officers who are serving in the "Algerine," for instance, trained in the very ship in which they will have to pursue an enemy's torpedo-boats? Surely there is a vast difference between vessels of that kind and the torpedo-boat destroyer. Therefore we would first of all clear ourselves of the charge of being actuated by mere sentiment, we who hold that there is a great deal yet to be done with the old system of training, and we also wish to show that the only substitute which has been suggested for it is a substitute which has no real existence. I challenge refutation of that statement. Sir Michael Culme-Seymour said it was his belief that the lecturer was biassed in favour of sails training. Even if he is biassed, surely no one could have come to the consideration of this question with a more open mind than a man in Mr. Thursfield's position. And if he is an ally of those who, like Captain Atkinson and others of us, are in favour of the old system of training, surely that tells tremendously for the system of training which we advocate. Sir Michael Culme-Seymour called attention to the belief that the deterioration, which may or may not be noticeable in the petty officers, is due to the rapid increase in the fleet and the consequent quick promotion. But that sort of thing has been going on, within my personal experience, for the last twenty-six years. I go back to 1874, when the complaint was frequent that we were taking men out of some ships to make them petty officers elsewhere. That is not by any means a process confined to the present day. But is the present age of petty officers below that of petty officers a generation ago? In the last few years I could see no very great difference in their ages. There is one thing which is sure to be highly gratifying to everyone here, namely, that we are all agreed, as Sir John Hopkins says, as to the necessity of further experience at sea. I do not think there is any difference of opinion about that. So now we come to this: Supposing that we do re-establish or adhere to training with masts and sails, it will not be necessary to take one hour, or even one minute, from the period of service on board the most modern sea-going ships, the ships which may be *le dernier cri* of naval architecture. We have simply to subtract the time from the very much greater amount of time which is passed in harbour or on shore. Then, instead of building imitations of ships on dry land we shall be able to have the real thing. Sails training, as Rear-Admiral Noel points out, does not simply mean crossing yards or even shifting topsails. It means, if you go in for it thoroughly, that you are compelled to be at sea. As Sir Gerard Noel and Captain Atkinson pointed out, we want what compels the sailor to be on the sea, and we want to keep him on the sea—as was the case in the late Training Squadron—thirty-four days continuously. How many of the rising generation have been thirty-four days continuously at sea who have never been in the late Training Squadron? That is what I believe is the whole lesson to be learned from the lecture which Mr. Thursfield has delivered, namely, if you adopt or adhere to this old system, you will necessitate more time being spent actually at sea, and, therefore, sea life, as it were, will become more and more a governing factor in the training and the formation of the future officers and men of the Navy.

The adjourned discussion on "The Training of Seamen" was resumed on Thursday, 28th June. Admiral Sir ANTHONY H. HOSKINS, G.C.B., again occupied the Chair.

The CHAIRMAN:—Mr. Thursfield has asked—it is not quite in order perhaps—but he has asked permission to say a few words at the commencement of this discussion in answer, or rather showing his views, explaining his views, with reference to some of the remarks which fell from speakers on a former occasion. I think you will agree with me there is no objection to his doing so, as it may help to elucidate the further discussion on the subject.

Mr. J. R. THURSFIELD:—I have asked and obtained the Chairman's leave to open the proceedings of to-day with a few remarks on the discussion of last week. They may serve to give point and direction to the debate which is to follow, and will, at any rate, furnish my critics with fresh material for criticism. I must, in the first place, thank all the speakers of last week most sincerely for the too flattering reception they one and all, critics and supporters alike, gave to the lecture. I esteem it a very high privilege to have elicited such valuable and instructive expressions of opinion as we heard last week from some of the most respected chiefs of the Service. I attribute this result much less to the merits of the lecture than to the intrinsic interest and vast importance of the subject; but I cannot regret that some of my remarks seem to have had rather a provocative effect, seeing that they brought some of the heaviest guns in the Service into action so effectively. I hope that to-day the secondary armament will come into action not less effectively—that we shall have the opinions of some of those junior officers on whom, in due time, the mantle of their predecessors will fall so worthily, and I need not say that I shall welcome their criticism not less cordially than their approval. For let me clearly explain once more that I do not stand here as the advocate of masts and sails pure and simple. I advocate the adaptation of the training of seamen to the conditions in which they will have to fight, due regard being had to the fact that the sea itself is the first and most vital of those conditions. How that adaptation can best be effected is a question which I must leave to the mature wisdom of the Service; but, for my part, I am content to take my stand on the very sagacious remark of Sir Gerard Noel that it is not masts and sails but sea training and habits that are essential, and I must express my gratitude to him for putting the real issue so clearly. Sir Michael Culme-Seymour and other speakers seemed to think that in spite of my profession of neutrality I displayed a bias in favour of masts and sails. But as Sir Cyprian Bridge very justly observed, I am at least free from any such bias in either direction as professional training and experience might be expected to impose. I am conscious of no bias myself, except that which a patient and, I believe, quite dispassionate consideration of the arguments *pro* and *con.* has imposed upon me. I am certainly not inspired by the sentiment and tradition of the older seamanship, for I know as little about it as the youngest midshipman afloat. I have said, and I repeat, that "whether masts and sails ought to be retained or not I do not know; I can only say that I have seen no arguments as yet to convince me that they ought not." But as regards the question of the bias which has been imputed to me, the truth is perhaps that when I began to consider this subject I found that there were many aspects of it which the opponents of masts and sails seemed to have overlooked—that, if I may say it with respect, their opinion seemed likely to prevail rather by weight of authority than by weight of argument. Hence in order to keep the balance even, as I desired and undertook to do, it was necessary to re-dress it in this sense. I offer the arguments I used for what they are worth, and I frankly confess that they seem to me to be conclusive only to this extent that they afford ground for suspense of judgment and for further consideration and enquiry. If I have established this much the sole object of my lecture will be attained, and I must add that the criticism to which I have been subjected points, in my judgment, far more decisively to that conclusion than any arguments I have used myself. Now, to take a few points in detail. I must admit that, in view of the criticism of the Commander-in-Chief at Portsmouth and of the opinion of the captain of the "Excellent," which he quoted, the figures which I cited concerning the proficiency shown by Training Squadron men at Whale Island cannot be pressed, at least without further examination and enquiry. Such further examination and enquiry I am not myself in a position to undertake. But I venture to submit that the matter is so important and the evidence so conflicting that

it might well be worth while for the Admiralty itself to institute an enquiry with a view to ascertaining, once for all, what are the real facts of the case. Opinions of high authorities are, of course, entitled to the highest respect. But where facts and figures are in question they are entitled to take precedence even of the most exalted opinions. When Charles II. asked the Royal Society why a dead fish placed in a bowl of water increased the weight of the bowl while a live fish did not, all sorts of learned reasons were given by the highest authorities for the alleged difference of weight. At last some grovelling minds suggested that the two bowls should be weighed, and then it was found that the alleged difference of weight did not exist. May another grovelling mind humbly venture to ask the Admiralty to determine the question of fact concerning the proficiency of Training Squadron men at Whale Island by the same common-sense method. I should next like to explain that in speaking of "The Training of Seamen" I had no thought of using the term "seamen" as applied only to a particular class or rating in the Navy, as Sir Michael Culme-Seymour seemed to suppose. I used it as including all those who require maritime skill for the exercise of their craft, officers and bluejackets alike. I should have been very sorry to use it in any sense which would have required me to assume that the Commander-in-Chief at Portsmouth was not a seaman; and had I used it in any sense which excluded the training of officers from consideration I should, as it turns out, have deprived myself to that extent of the powerful support of Sir Michael Culme-Seymour himself, who avowed that he did not know any better school for the training of young officers than a masted Training Squadron. In spite of this very significant admission, however, I will for the moment, and for the sake of argument, assume that masts and sails must go, that it has been my melancholy privilege to give utterance to what Sir Mchael Culme-Seymour called "their last dying gasp." Rear-Admiral FitzGerald writes to me in the same triumphant tone, and in spite of what we heard last week I am happy to say that his letter satisfies me that he is enjoying his usual health and spirits: "This poor old seamanship horse dies hard," he says, "and as a mere matter of humanity we must try and put him out of his misery." Well, let us be quite sure that when this old horse that has carried us so nobly through many a long and arduous day goes at last to the dogs, the naval Service of this country does not go with him. I, at least, am not going to predict this catastrophe. I have perhaps seen more of the naval Service afloat during the last twelve years than any civilian has ever seen before, and it would ill become me to say a word in its disparagement. Indeed, I have no such word to say. I know that the spirit which actuates the whole Service is that of Torrington: "My lord, I know my business and will do my best with what I have." But what the Service has is what the country gives it. The country has given it a new Navy of unexampled strength and efficiency in *matériel*. For its *personnel*, on the other hand, it has given it no commensurate training. This is not my criticism. Had I made it I should almost have expected to be accused of libelling the Service. But let me just assemble together a few of the admissions made by officers of high station and authority, every one of whom is of opinion that masts and sails are at their last dying gasp, that seamanship is a horse that has had its day. The Commander-in-Chief at Portsmouth tells us that the Training Squadron was an excellent school for young officers, and that we have as yet found nothing so good to put in its place. The Commander-in-Chief at the Nore tells us, I hope with some exaggeration, that the British bluejacket is now the worst boat sailor in the world. Yet I suppose that it may still happen to any officer any day to have to sail a boat as Sir William Kennedy once did for 400 miles dead to windward across the open sea in the teeth of a monsoon, and, henceforth, he will have to do it with the worst boat sailors in the world. The late Commander-in-Chief in the Mediterranean tells us that our men-of-war are not half as much at sea as they ought to be, and that even the gunnery of our seamen is very far from satisfactory. The late Second-in-Command in China insists "that a complete

revolution in our training service is absolutely necessary if we are to keep pace with the times and not see ourselves surpassed by other and more intelligent nations." And lastly, the distinguished correspondent whom I quoted last week, admitted in the same letter that it nowadays takes the whole watch of a man-of-war to hoist a cutter, whereas formerly the work was done by half the number of men and done quite as well, if not better. In view of these alarming admissions by some of the highest authorities in the Service, the issue of masts and sails or no masts and sails seems to sink into absolute insignificance. It is not for me to say whether the restoration of this particular discipline to the training of the fighting seaman is the proper or the best corrective for these admitted and most deplorable results of the system which is now taking its place. But it is surely for the Service and its rulers to say whether they will or can be content for a moment with a system against which so much can be said and has been said by the highest authorities—a system which lightly abandons the best school for the training of young officers and puts nothing so efficient in its place; a system which produces the worst boat sailors in the world; a system which keeps our men-of-war in harbour and lowers the standard of gunnery; a system which reduces the *physique* of the bluejacket by some 50 per cent.; a system which must be recast from top to bottom if we are not to be surpassed by other and more intelligent nations. I waive the question of masts and sails altogether; but I must be permitted respectfully, yet most emphatically, to urge that the state of things disclosed by their opponents is one with which neither the Service, nor the Admiralty, nor the country can possibly be satisfied for a moment. What the remedy may be I do not profess to know; but that we must find it and apply it forthwith is, I think, a conclusion which this discussion has already established beyond dispute.

Admiral the Hon. Sir EDMUND R. FREMANTLE, G.C.B., C.M.G. (late Commander-in-Chief in China and at Devonport):—I would rather myself, like others, have heard the course of the discussion, especially in view of the fact that I had not the advantage of attending here at the beginning of the lecture, or to hear the discussion which took place on the occasion; but I have had, owing to the courtesy of a gentleman who was present, the lecture sent to me, and he kindly informed me, shortly after my arrival here two or three days ago from Japan, that this lecture had taken place, that the adjourned discussion was to take place this afternoon, and that there was a very considerable difference of opinion on the subject to which the lecture relates. I also know from some of the younger men of our profession that they are very much interested in the matter. I believe the great majority of them have strong views on the subject, and I was asked whether I would put in my oar and have my little say on the subject. It is a subject which, of course, interests me very largely. I flatter myself that, like most of those men who have been in the Service, I have had some training under masts and sails. A great portion of my early time was spent amongst sailing-ships, and in pure sailing-ships. My first eight-and-a-half years in the Navy were spent in this way. I was in a 20-gun frigate for five-and-a-half years in China, and, of course, during that time my acquaintance with masts and sails ought to have been very good—and I believe it was very good. I have also had considerable experience since in the detached squadron. For two years I commanded frigates, and I have come home from India purely under sail. I am very fond of sailing, and I only mention those facts to show that if I am not an advocate for the retention of masts and sails it is because masts and sails have left us. The thing which one learnt in one's youth is that which one knows best and probably loves best. Therefore, if I am not amongst those who think it is advisable or absolutely necessary that the seaman of the present day should spend a portion of his early training in connection with masts and sails, it is not because I do not appreciate the advantages which were offered by that training both to our officers and men, but

because I feel that masts and sails have left us, and that we must adapt ourselves to modern requirements. I feel it is rather a case of crying over spilt milk if we attempt in some way or other to resuscitate a training which I venture to think, in spite of the lecturer's statements, is dead and buried. I think myself it is a case of flogging a dead horse. I said that to a young officer just after my arrival in England, and he said: "Do not say that, because there are a great many distinguished officers, men of the day, men whom we all hold in respect, who believe in masts and sails." I entirely agreed with him. I need scarcely mention names, but there are, of course, Sir Cyprian Bridge and Sir Gerard Noel who are well-known men, and not particularly men we should naturally put down, to use a Whale Island expression, as obsolete. The charge may be fairly retorted on myself. But as they have given their opinion so emphatically as I understand, and in spite of what the lecturer tells us, I am strongly of opinion that he endorses that view. That is, at all events, the tendency of his lecture. He has made out, as far as I can see, an extremely good case for it. Therefore, as there is undoubtedly a strong tendency amongst a considerable number of officers, at all events amongst those best qualified to judge, that we must in some way or another retain the training of masts and sails, retain the Training Squadron, or increase it, I think it worth while my stating in a few words the reasons why I think it is impossible to do so. Sir Gerard, I believe, tells us we can have eighteen sailing-ships. I have not had the advantage of reading his paper. I have only had the advantage of reading Rear-Admiral FitzGerald's article, which I believe certainly very strongly disagreed with it, and, perhaps, did not present it as fairly as Sir Gerard Noel would have put it himself; but, I believe, at the same time, that Sir Gerard stated eighteen ships. Now does anybody consider what that would mean?—a squadron of eighteen ships, not supposed to be fighting-ships, cruising somewhere? You cannot well keep them in the Channel. I know what it is. It is said, "Do not let that ship go away from Falmouth, do not let that ship go away from Portsmouth," and so on. That is not the training we consider necessary for a man-of-war. You must not only incur this very large expense, 20 per cent. perhaps, in addition to the Navy Estimates, but you must also have the risk and danger of having your men at the other side of the world when you want them, and I think the responsibilities of the Admiralty would be very great indeed. If you felt that you had a few squadrons and training-ships, four ships here, half-a-dozen there, in mid-Atlantic, in mid-Pacific, liable to be attacked by two or three small second-class cruisers, and some of your best officers and men sent to the other world without having a fair opportunity of firing a shot in self-defence—I do not think any Admiralty would stand that. I have not had the benefit of being a member of the Admiralty myself, but I quite understand what the responsibilities of the Admiralty would be under such circumstances, and I venture to think they will never incur them. Therefore, putting aside the question of expense, I maintain that no one would undertake the responsibility of doing what apparently has been gravely proposed by distinguished officers. Then there is another question: is it possible to resuscitate a state of things which existed thirty or forty years ago? Is there enough reality in it? What about the present sailor? Is he the man who takes everything for granted, who has no idea of his own? If you tell him it is most important that he should reeve the halyards correctly, or pass a rope in a proper manner, and you show him all the advantages of it, if he is a man of the present day he says, "I must do this because I am told to do it, and this is a part of the training, and I have to do my duty." But does he take, and can you expect him to take, that real interest in it which he would have taken twenty or thirty years ago? I am certain it is not so. Most people recollect that some time ago it was extremely difficult to get the young seamen to go in for being boatswains; they preferred to go in for being gunners. I was asked, amongst others, by the Admiralty to get seamen to volunteer for boatswains, and to ask them why they would not. I did so, and one of them told me that the boatswain had not

got very much to do now, and that he could not hold the position which the gunner naturally holds. It is not only that the gunner holds a nominally higher rank, but the gunner has the real business to do, and the man I spoke to thought the boatswain's business was a comparatively small one. That is the opinion of everybody who goes in these sailing-ships. In these days, if you were to attempt to sail, or attempt to put a large number of your men through the Training Squadron, to give them the experience, which you think is so absolutely necessary, of masts and sails, you will find they will not take to it with the same interest. They will not feel that they are really doing solid work, and consequently it will not have the benefit which it had years ago. Now, I admit the point which was made a great deal of by the lecturer, that Sir Michael Culme-Seymour stated that the best school for young officers was in the training service. There is a great deal of truth in that. I think myself that the advantage of the Training Squadron is very much more decidedly shown with the young officers, who did feel that they had something to do in handling a ship. They felt they had some power when they gave their orders, and that it was absolutely necessary for them to keep their eyes open in a ship under sail, which they scarcely feel under similar conditions in the big ships of the present day. But I venture to think we shall not keep a Training Squadron solely for that purpose. In the first place, the difficulties are so great that the Admiralty will never do it. But can we not see in the torpedo-boats and destroyers, and other small craft we are multiplying now so very largely, that the young officer learns a very great deal? He learns a great deal, at all events, of that which he is expected to learn, and does learn, in the Training Squadron. By these means we are more directly in the spirit of the age; they are part of our fighting machines, something which we do require the young officers to learn. They learn how to handle a ship; they learn how to navigate a ship, to pilot a ship, to take command of their men; they learn what their responsibilities are; and they learn a very considerable amount about steam and motive powers, which is so important in the present day when we are entirely dependent upon steam. A young officer of a torpedo-boat destroyer will generally give you a very good account of the numerous damages which happen to the ship he commands. I think in that direction we shall have a training of officers really of far greater importance than that training to which Sir Michael Culme-Seymour alluded. I think I have said all I wish to say, except that if the seamen of the present day in the Navy are the worst boat sailors in the world, they want more practice in boat sailing, and it is much more important that we should take them out of the training service and give them plenty of boat training than that we should put them into ships with masts and sails that they will never see again. I am sorry if I have detained you too long, but, like many others here, I feel there is a great deal to say, and I am afraid I have said more than I intended.

Commander D. R. LOTHIAN NICHOLSON, R.N. (H.M.S. "Resolution"):—I am afraid I have come here under rather different circumstances from those under which Sir E. Fremantle came. Sir Edmund has dealt with the whole subject, but I have come here merely to give the expression of opinion of an executive officer. I do so with very great misgivings, because I notice there are many great and distinguished men assembled here, and a very undistinguished one is not likely to carry much weight. Nevertheless, I have this behind me, that I feel I am expressing the opinion of a very, very large majority of my own contemporaries in Her Majesty's Navy, and therefore I am prepared merely to give the feelings of an executive officer. I spent two years in a Training Squadron ship, and I now have the honour to be commander of Her Majesty's ship "Resolution." When I went to the training-ship I went with a very great bias against the masts and yards system. I was very much inclined to persuade myself that masts and yards were gone, and that the British bluejacket could be made a seaman without masts and sails at all. Therefore I hope I shall be credited with having thought out both sides of the question

when I say what I am about to say. I am about to say that I entirely disagree with the opinion that masts and sails are gone. I think we cannot do without them. I am not in the least impressed with the face logic of the statement that it is necessary to put a man in the ship he is going to fight in order to train him to fight that ship. I am most firmly of opinion that if you want a man to fight a gun you must give him as much training as you can with that gun and as much practice as possible. You cannot make him fire a gun too often. But if I were of opinion that sea gunnery was the alpha and omega of sea training, I should be prepared to say with Sir Michael Culme-Seymour that masts and yards are dead, and that although I love them I have no further need of them. That is not my opinion. I place the greatest faith in those qualities which are enunciated by the *Times*. I believe that we cannot do without them. If the British seaman is to remain the British seaman he has been, he must have certain qualities, and those qualities can only be given him, as far as I know, by mast and yard training. They will not be given him by mastless training. And I further base my faith upon this statement that masted ships make seamen, and that not too expensive gun training will make seamen gunners. Mastless ships will make sea gunners, but they will never make seamen gunners. There is a good deal of difference between the words "seaman gunner" and the words "sea gunner." For the first part of my statement we have the evidence of past centuries. In spite of what the distinguished admiral has said of the proud recollection of having handled sailing-ships alone, we may say to the contrary that there are very few people who will agree that the sailing-ship with steam power, which is only used in emergency, is not just as good for all practical purposes of sea education as a sailing-ship without that steam power. Sir John Hopkins, I see, is not here, but I should like to tell him, with all due deference, that his fears about the Training Squadron steaming against the head sea or head wind are not based on any foundation of fact, as far as the training-ship I had the honour to serve in for two years is concerned. When we had a head wind we beat against it in the time-honoured way. For the evidence about the second part of my statement, that mastless ships would only produce sea gunners, who is there who has served in modern fleets who is not perfectly well aware that from day to day we go nearer and nearer to the condition of making the efficiency of the gun the sole and only object of our professional work and thought? The masted ship at sea will give training to the hand, eye, and brain, which are ever on the alert. The mastless ship at sea will do nothing of the kind. They will teach men to be gunners at sea, and if that is the only object, I have nothing more to say. But that is not my opinion. You may take the whole of the modern ships for a year, and in that year you will teach the bluejacket to fight his guns at sea, but you will teach him nothing else. How can a man learn anything at sea if he is merely carried about from one place to another without having to make any effort of any sort or kind on his own part to bring that result about? It is quite impossible—at least, that is my opinion of it. To return to the harbour comparison between mastless ships and masted ships, it may be said that it is perfectly easy to give a bluejacket just as much boat training in a mastless ship in harbour as it is in a masted ship. So it may be if he has the time for it: but modern ships do not give that time. In a modern fleet the steamboat is an absolute necessity. I remember when I was at the last Jubilee Review, a yachtsman wrote to the *Times*, saying it was perfectly absurd the way in which the British bluejacket was carried about in a steamboat, and Rear-Admiral FitzGerald snubbed that yachtsman until he felt extremely small. Where the steamboat comes in, the pulling and sailing boat must give place to it. In a modern fleet, I say, you cannot train a man in pulling and sailing the way you can in a masted Training Squadron. It has been said in this theatre that pulling and sailing have disappeared in the Navy. I do not think that is quite true. As far as the Training Squadron is concerned, the steamboat is not used from one year's end to another; and therefore

the bluejacket is trained in pulling and sailing; and he knows how to pull and sail in the Training Squadron. But I am quite willing to allow that pulling and sailing are rapidly becoming a lost art in modern fleets. Sir John Hopkins said that it was perfectly easy to make men run. Now, I venture to differ from him. It would be perfectly easy to make men run on board a modern battle-ship if you had anything to make them run for; but you have not got it. I defy Commander Hopkins, of the "Royal Oak," to produce anything like the same results on board a modern battle-ship with a modern crew in the way he did with the "Royal Oak" during his celebrated commission. It is easy enough with the stirring music of masts and sails to swing men if you have a swinging voice and a quick eye, but if you have not got masts and yards, I defy any man alive to make the modern bluejacket run about. I have looked at both sides of the question. I began with a bias one way, and I am bound to confess I have now a distinct bias the other way. I happened yesterday to say that the bluejacket who is trained with masts and yards is far better than the man who is trained in a mastless ship. I will go so far as to mention this small detail—that if you take one representative of each class, and give each a boat's davit to chip the paint off, the masted man will chip the paint off in half the time the mastless man would do it. Sir Michael Culme-Seymour, in order to prove that the bluejacket of the present day is as good as the bluejacket of the past, produced two naval brigades, and found they were equal; but I venture to account for that by saying that the old leaven, the spirit of masts and yards, lingers amongst us still. The thorough-bred breeding does not die out of a breed of racehorses, however much you may cross them. The old leaven lingers, and, please God, it will linger. But I am prepared to maintain that if in ten years' time you train your bluejackets in nothing but mastless ships, you will have nothing like the same article to produce a naval brigade out of as you have at this moment. I can say something about petty officers, but my ten minutes are about up. Still, I should like to mention one little thing that happened to me yesterday. I was going on board in my steamboat with the gunner of my ship, and I said to him, "I am going up to London to-morrow to talk about the training of seamen." Whereupon he immediately said, "Well, sir, I should like to express my opinion on that subject." I asked him what his opinion was—I did not advise him or hint anything to him, or in any way influence him—and he said:—"I was three and a half years in a cruiser as a youngster, and I thought it was a most hopeless existence, and I hoped to God I should have nothing more to do with it. Afterwards I became a gunner, and went to the 'Active,' and there I learnt that a bluejacket was made what he is by masts and yards, and therefore I changed my mind. From there I went as instructing gunner in turret guns in the Sheerness Gunnery School. I took a great deal of interest in it, and watched the fellows very carefully, and it was perfectly extraordinary that the men who learnt the gun quicker than anybody else were the men who came from the Training Squadron." Is not that a most extraordinary thing? He then went on to say that the seamen who come from the Training Squadron are not approved of in the Channel Fleet by the petty officers, who are quite well aware that they know a great deal more about their business than they do themselves. That is an expression of opinion from a gunner. I did not encourage him, and merely let him wander on. I see that the question of officers has risen in the discussion. Mr. Thursfield has corrected Sir Michael Culme-Seymour's view that only men are regarded as seamen, and not officers. I feel so strongly for the officer that I should say, even if it did the men no good, it does the officers such an astounding amount of good that for that alone I should keep the Training Squadron. I can assure you it is perfectly astounding what a difference there is in a young officer after he has been in a Training Squadron for only a year. I heard Sir Gerard Noel say the other day that the captains under his command in the Mediterranean complained that the young officers were very little use. I venture to say that if every one of those young officers had been through the

Training Squadron those captains would have chanted their chorus in a totally different tune. I do not mean to say that one year will make the man brilliant, but it will make him extremely different from what he is now.

Admiral of the Fleet Sir JOHN E. COMMERELL, V.C., G.C B. :—It appears to me that a certain clique of officers have all of a sudden assumed, without any very great ground to go upon, that exercises with masts and sails are dead. Now I believe myself that they are not dead, and that it would be a very very great pity and very much to the detriment of our men as practical sailors if it were so. I can only reiterate what we have learnt in that excellent paper of Mr. Thursfield. When we look back to days gone by, we see how admirably the men were brought up as upper-yardsmen. If we wanted good petty officers, trustworthy, self-reliant men, we always turned to those who had been trained as top-gallant and royal-yardsmen in well-regulated ships. I do not think there can be the slightest doubt about that, and when you come to think of it, it is not to be wondered at. A man who is smart aloft, and two or three times a day has to trust to his own wits, and has very little between himself and death, acquires habits of bravery, self-reliance, and a capability of using his wits. I believe further the remark which the lecturer introduced, that it induces a spirit of comradeship, and that the men who have been for some months alongside of each other on the top-gallant and royal yards become firm friends, and they are perfectly prepared to look for assistance and help to one another. I do not think for one single moment that the Training Squadron as it exists at the present time can go on. It is neither one thing nor the other. The Training Squadron has been for some time past a half-hearted service, the officers not always selected as good instructors in seamanship and the men pitched rather haphazard into the training-ship. "Such and such men are available for the training service; put them in at once without any regard to the educational part." I believe myself that what Sir Gerard Noel says is perfectly right, and that we should have special squadrons. It is not necessary that those Training Squadrons should be wiped off the list altogether as not being capable for service, but I think they should be looked upon as forming part of the educational plant. If the country wants to have men as good seamen, they must be prepared to pay for their education. I do not think when you show the country that this is the only way in which you can educate seamen and make them good petty officers and "handy men," there will be any hesitation in the matter. We never yet have had to turn to the country or to Parliament to find they have been slack in giving the money required, but very properly it must be shown to them that the necessity has arisen for the expenditure being incurred. Admiral Fremantle drew a comparison between torpedo-boat destroyers and masts and yards. Now I think he has lost sight of one thing: that we have come here to advocate the question of the education of seamen and not the education of officers. I believe that the torpedo-boats and the destroyers are most excellent schools of instruction, and I am sure for the young officers of the Navy they have been the salvation of the Service—they have taught them pretty well how to rough it. A man who goes in a torpedo-boat to Bermuda, and has very little time to eat and hardly any time to wash himself—and if he had there would be no water—becomes if he loves his profession an enthusiastic sailor. But it is not the education of officers but the question of the education of men that we have to consider. It is not always that every man who enters the Service at 15½ years becomes a gunner. There are a good many of them who never will be gunners. What becomes of these men? I think in the training service they will be weeded out, and there would be no attempt to give them an expensive education such as is given on board the "Excellent." I have a very shrewd suspicion of one thing, that it would be far better for the young seamen of the Service after they left the "St. Vincent" and the other training-ships that they should go to sea in well-disciplined, well-found corvettes, than it is that they should knock about Portsmouth, even in that admirable establishment Whale Island. We know

perfectly well that seaboard towns are not the very best schools for young seamen, and I think it would be far better that they should take a trip round the world. I should like to see three squadrons of corvettes constantly on the distant stations, one squadron, however, always being not very far from home. I am perfectly convinced in my own mind that you never will get any education so good as masts and sails to teach a man that which we want him to become, a British seaman and a "handy man." Rear-Admiral FitzGerald is very strong upon that point, and he assumed, I think, perhaps a little bit too harshly, that all we old officers who do not agree with him are old fossils. As the lecturer pointed out, perhaps it was assuming a little too much, but those who know Admiral FitzGerald and who have read his writings know that he is always amusing and sometimes—and sometimes only—instructive. But I trust my Lords will weigh carefully the whole question and not allow clamour to get the better of their judgment.

Commander T. D. W. NAPIER, R.N. (H.M.S. "Spiteful"):—It would appear that the discussion on this subject, which from its scope might have covered a very wide area, has practically reduced itself to the efficacy or otherwise of mast and sail drill. Mr. Thursfield has assured us in his paper that any difficulties as to expense will be immediately waived aside by the British taxpayer, so that that question may be wiped off the sheet. Under these circumstances it seems to me to resolve itself only into the question of whether the British seaman is *materially improved* by mast and sail training or not. Some criticism has been forthcoming during the last week on several gentlemen's opinions, inferring that they were only expressions of opinions and assertions, and lacked argument. I think that has been repaired this afternoon, because some arguments have been put forward which are very strong. But at the same time it is a subject, I think, which is very difficult of argument, and it is essentially a matter *for* assertion and a question for the opinion of individual officers, as to what they think about it. I should like to add my opinion to those of others, that the seamen who have undergone mast and sail training are undoubtedly superior men to those who have not; they are better men, I think, at, as the phrase goes, "a job of work"; and "a job of work" seems to me to cover a very wide field and a large number of the duties which seamen may be called upon to perform in modern warfare, which has many new methods and which has infinite possibilities. In training our men the *maximum* of efficiency should be aimed at, and I should not be content to have a man merely trained to fight the gun which he will have to fight in a fleet action, he should not be merely trained to as high a standard as those of any foreign Power; but the British seaman in the future should be, as he was in the past, the very finest form of seaman afloat. That is the standard which we should aim at. So that if the first point is not admitted, viz., that a man is improved by mast and sail drill, the discussion falls to the ground, and the masts and sails go. But if it is allowed by a majority, and if the opinion of the Service is, that men are improved by that drill, then I think that any question of expense, of interference with other training, or difficulties of mobilisation schemes, or peace employment, should not be allowed to stand in the way. They are only obstacles to be overcome, and ought not to be used as arguments against the system. They are the price which we have to pay for having seamen of exceptionally high standard, and with exceptional all-round qualities. The doing away with masts and sails is a large question, especially when one bears in mind the fact that masts and sails once done away with are done away with beyond recall. They cannot be called back later on when their need is found. I think, therefore, in considering a large question of this nature we ought not to allow the present resources at our disposal to come into the question at all. It is quite possible that, should it be considered necessary and desirable to continue mast and sail training, it still may not be possible *at present* to carry it out, or only to carry it out to a limited extent. But at the same time it remains an ideal to be aimed at, and it also remains the studied answer to a well-discussed

question, and as such I think it is of infinite value to those who have the administration of the Service. Any obstacles to it will probably disappear in course of time in the same way as obstacles now disappear before the British bluejacket himself. Service in torpedo-boat destroyers has been alluded to as a possible substitute for training men in many of the qualities which they now obtain by mast and sail drill. I think, from experience, that it must be said to be a service in which all those qualities will be most truly appreciated, more perhaps than in any other service, but I should scarcely think it was the school in which you could develop them. I am speaking of the men alone and not of the officers, because I think it is a very high training for the latter. In torpedo-boat destroyers and torpedo-boats, which are small craft which will probably figure very prominently in any future warfare, a very high standard is required for success, as was shown in the late Chino-Japanese war, where the torpedo-boats were required to perform their duties under exceedingly trying conditions. The very highest forms of courage, endurance, and resource are called forth in that class of work. These, I think, are just the qualities which are brought out and developed in men by mast and sail training. I have not had the advantage of serving in the Training Squadron myself, and therefore I am unable to give an opinion of any value about the Training Squadron as it was; but I think that any sailing-ship scheme for success in the Service would have to be a very thorough one, and all half measures would have to be renounced. The training should be of considerable length, say two years, and some kind of scheme similar to that which has just been outlined by Sir Edward Commerell. I think it is sure to entail much expense. It is also a *sine quâ non* for a sailing-ship scheme to be a success that the men under the training in those sailing-ships should be considered as an addition to the full manning of the fleet, and not as part of it. If they are regarded as being part of the manning of the fleet, difficulties are at once introduced at every turn, when warfare comes so quickly. It is not very many years ago since a bluejacket, if he was asked what his gunnery qualifications were, would pat his chest and reply, with a flush of pride, that he was a "general service man," by which he intended it to be inferred that he was fit for any and every service. But the real truth of the matter was that he was not particularly good at any service except scrubbing decks and pulling an oar—both excellent things in themselves, but still hardly what you could call general service. But those times have changed, and there is no doubt that nowadays the *élite* of the British seamen are the gunnery and torpedo men. But I think that, as in the old days, the seaman proper had the finishing touch put to his education by being made really proficient in gunnery, so it is equally essential in these days that the gunnery and torpedo men should have the finishing touch put to their education by seamanship, which is just what is required in order to bring them up to the very high standard that we ought to aim at.

Admiral of the Fleet Sir FREDERICK W. RICHARDS, G.C.B. (late First Sea Lord of the Admiralty):—I had not the advantage of being present when this discussion was first opened, and so I did not hear Mr. Thursfield's paper read, but I have seen the report in the columns of the *Times*, and I must express my admiration at the exhaustive manner in which it has been reserved for a layman to treat a technical subject of such extreme importance. The paper should carry with it, to all unprejudiced minds, the conviction that the present system of masted ship training should be adhered to and amplified. I have been out of the country for some time, and I do not know how this question first arose. Perhaps from the fact that the crews of the Training Squadron were turned over to swift cruisers last October; but I hope that the promoters of the raid upon the masted Training Squadron are wrong in supposing that the Admiralty in adopting that course had any ulterior object. As I understand the case, the squadron was turned over in the month of October last for service on the lines of communication with the Cape on the outbreak of the

Boer War, and I hope soon to see the companies returning to their proper ships. There has been a good deal of writing on the subject of the masted Training Squadron, but I do not find many reasoned arguments adduced in support of the contention that it ought to be abolished. Quite the contrary. The principal "argument," if argument it can be called, seems to be that the squadron is doomed, and that there is no standing up for it; but I hope that is not the case. What do the opponents of the system wish to substitute for it? You have got an established system, and a time-honoured one. You catch your boy and you train him in a masted harbour ship. You make him lively, and then you send him away to brigs and continue his training there. Having gone through that course, you send him to a sea-going training-ship to get his sea legs and learn what seamanship means. You impart to him qualities of nerve, steadiness of head, and quickness of eye, which you can impart in no other way, and what object is to be gained by abolishing that finishing course which is the necessary complement of what has gone before? A great deal has been said about the man behind the gun, but it seems to me to be a veritable bubble. It is a catching phrase calculated to go down with the public, who do not understand the issue. If you want a good man behind the gun you must have one who has got the nerve of the royal-yardman, who has got his sea legs, his sea head, and also his sea stomach; and in him you have the best possible material from which a seaman gunner can be made. It has been said, "Oh, you must send your men to sea in the ships they have to fight in!" You cannot ensure that. They must be moved about, and in every different type of ship the arrangements are different. You go to quarters and exercise at target practice in a masted, the same as in a mastless, ship, and you do it under steam. The ships have got modern guns in them, and the training is similar to that which, under ordinary circumstances, men would have in a mastless ship. Sir Michael Culme-Seymour is reported to have said that in the "Ramillies" (the flag-ship in which he so admirably led the Mediterranean Squadron for over three years) he had the smallest men physically he ever commanded, but in discipline and sea-going qualities as good as any he had met; but he does not seem to recognise that those small men had all, probably, or for the most part, passed through the masted Training Squadron. Sir John Hopkins makes a statement which I think must be rather annoying, to say the least of it, to those gallant seamen who have successively commanded that Training Squadron for years. He is reported to have said that "there was too much tendency to steam through bad weather, and when they got through it to set the sails." Why, any man who found himself in a gale on a lee shore would be an ass if he did not get up steam. If he has got auxiliary power he ought to use it when necessary. But that they always get up steam when bad weather comes on is altogether a misconception. I know that from my experience at the Admiralty, where it was my duty to examine the journals and reports of the commodores in command of that squadron, and the general impression conveyed was that when they had to report getting up steam the report was made as if in apology for the commission of a crime. According to Sir John Hopkins, the new Training Squadron did not get the experience of old days, etc. Now I have here some figures showing the work done. In the year 1894 the squadron was 153 days at sea. Out of that time they were only 18 days under steam alone—certainly sometimes, to keep programme time, under steam and sail, but actually under sail alone 71 days. The next years, 1895 and 1896, they were kept in hand for special reasons; but in those years they were at sea for 117 and 129 days respectively, out of which time only 16 and 25 days were under steam alone. In 1897, a full cruising year, the squadron was 173 days at sea and only 18 days under steam alone, against 96 days under sail only. In 1898 the winter cruise of the squadron was again interrupted for special reasons, but in that year 128 days were passed at sea, 19 days under steam only. What is now wanted is an addition to the number of the ships in the Training Squadron to balance the large increase of *personnel*. There are not so many

ships required as has been indicated. I think to double the number would be quite sufficient.

Admiral of the Fleet Sir J. E. COMMERELL:—Would that pass the majority of the men?

Admiral of the Fleet Sir FREDERICK RICHARDS:—That would pass the majority of men. I think you now pass through the squadron about 1,600 to 1,800 a year. As to expense, I do not see any cause for alarm on that ground. It is much cheaper than keeping the whole fleet steaming about at slow speed, for the purpose of training ordinary seamen. It was always my wish that the Training Squadron should be increased in numbers, say two divisions of four ships each; but you cannot do everything at once. You cannot nearly double the strength of the fleet in commission and do everything at the same time, specially for want of officers. In addition to the increase of the ordinary fleet in commission during the past six years, the "Northampton" and her two sea-going cruiser tenders, the "Calliope" and "Curaçoa" were added to the training service. They all took officers, and you could not get them fast enough. But now, under the provisions of the Orders in Council, based on the report of the committee over which you, Mr. Chairman, so admirably presided in 1894, the numbers of lieutenants are steadily increasing. There will be soon plenty of officers to spare, and there is no reason why the ships should not be increased in numbers. There are still several vessels available. I can only say that if there is to be a change I hope those now responsible for the administration of the Navy will very carefully consider the question before they do anything which may have very far-reaching consequences to the efficiency of that Service on which the life of the nation depends. There is no going back. Once the thing is done, it is done, and a great responsibility rests with those who have to make the decision.

Commander W. F. CABORNE, C.B., R.N.R.:—I will not take up your time, Sir, for more than a minute or two, but the lecturer, in presenting the case for what is termed the discipline of masts and sails, has stated that the Board of Trade insists that every candidate for a master's certificate in the mercantile marine shall have made a certain number of voyages in sailing-vessels, and this statement is calculated, although quite unintentionally, to somewhat mislead, the fact being that it is possible for a man to command the largest of our mail-steamers without his having served for a single day on board a sailing-ship. Dealing with the foreign trade only, and not taking any notice of the different grades, or of the little technicalities connected with "fore and aft" certificates, there are two classes of certificates in existence, respectively known as "ordinary" and "steam," the first being available for either sailing-vessels or steam-vessels, and the latter being available for steam-ships only. A candidate for an ordinary certificate must prove that he has served twelve months in the foreign trade, or eighteen months in the home or coasting trade, in a square-rigged sailing-vessel. For a steam certificate no sailing-ship time is necessary. Twelve to eighteen months' sailing-ship service seem to be a very short period to insist upon as a qualification for an ordinary certificate, but, in actual practice, I understand that candidates have usually very much more experience of this description to their credit. With regard to the main question under discussion, I feel that in the presence of so many naval officers of high rank, long and distinguished service, and of diverse views, it would be presumption on my part to offer any definite opinion; the more that there is so much to be said on both sides. Accordingly, I will only ask the lecturer to pardon me for having brought to his notice the slight error he has made in his valuable paper.

Captain R. F. H. HENDERSON, C.B., R.N. (Captain Superintendent of Sheerness Dockyard):—It is with great regret, but with firm conviction, that I have come to the conclusion that all mast and sail training must be abolished, and that a great alteration is necessary in the training of officers

and men to suit modern requirements and to obtain command of the motive power. Our duty to our ships is the same as the duty of the men of Nelson's time was to theirs: that is, we have to work, to fight, and maintain them under all possible conditions, and training should aim at thorough efficiency in these points. Anything outside of them may be useful, but is not essential. As regards the training for work, I consider that only modern seamanship should be taught, such as helm, compass and lead, boat, anchor and cable work, splicing and seizing of hemp and wire, fitting, rigging and placing of sheers, derricks, coaling appliances, and the like. The men should be practised to work in the engine-room and stoke-hold, the more men you have on board the ship that are capable of carrying out this work, the more efficient will the ship be. As regards fighting, I believe everything is now done that can be to make the men efficient with the gun, the rifle, and the torpedo. With regard to maintaining our modern ships, our forefathers with battered hull, masts and yards carried or shot away, were able in a few hours by their own resources and knowledge to effect repairs sufficiently to renew the action or commence another. What can we do in this respect? It seems to me that we are almost powerless. There is no reason that we should be so. The blue-jacket should be trained to be a rough mechanic, so that under the supervision of those skilled on board he could effect repairs to hull, gun-mountings, and the like. I should have the men taught to chip, rivet, and drill, to use a caulking iron and a blacksmith's hammer. It is not a difficult matter, for many stokers soon become mechanics from working with the engine-room artificers on board the ship. The ordinary labourer, the man from the street, without a bit of knowledge, comes into the dockyard and in a short time, if he has the slightest intelligence, becomes a skilled labourer and performs a very large portion of the repairing and ship-building work; certain it is that it will be a very great advantage either to a fleet or to a ship after an action to have a number of men who can perform this work. The ship will be more self-contained, and the men will be as handy and as resourceful in this mechanical age as their predecessors were in the past.

Rear-Admiral C. JOHNSTONE:—I think previous speakers have almost said everything I wish to say. The arguments that have been brought forward on either side, and have been brought forward for years past, are extremely interesting, but I do not think they convince anybody. The individual opinions of one side balance the individual opinions on the other. I do not think we get any further. What seems necessary is that there should be a careful inquiry into this matter, in whatever way the Admiralty may decide, and then the individual opinions brought forward will be thoroughly weighed. There is no doubt that the views of anybody who has been closely connected with the Training Squadrons will have far greater weight with the committee than those of officers who have simply formed their opinions without any special knowledge of the subject. The question of the training service is a special one. I do not think anybody who has not been in connection with the training of the boys fully grasps what it is. It is a sort of revelation when one comes in contact first with the training service, and I think everybody who has done so will bear me out in saying that it is a sort of revelation as to the method in which the seaman is produced. It certainly was so with myself, and I had some experience of the matter in a training-brig with boys and ordinary seamen at sea, and afterwards in the Training Squadron. As it happened, by an accident I was longer in command of a ship in the Training Squadron than anybody else, and I think the experience of those who have had any connection with the squadron is different altogether from those who have had nothing to do with it, and their opinions certainly will have a very different reception at the hands of the committee. Therefore, I think nothing further can be done in this matter until it is thoroughly inquired into. I think it is a matter of the greatest national importance. I do not want to repeat the arguments I have used for years past, both in writing and speaking, but I am extremely pleased with what Commander Nicholson said. I go fully with him. It is what I have

always expected that the young officers of the Training Squadron would say. They are enthusiastic about it. If I thought the young officers who had been through the Training Squadron would not support it, I would not say anything in its favour. I should consider my own ideas were mistaken. But I am convinced the people whose opinions really are of value are those who are not, perhaps, actually in the training service, but who have recently passed out of it, whose minds, so to say, have calmed down after the worry and excitement of the training service. They look round the Navy and see what the other people are, and they take stock of the whole situation, and I believe their opinion is most valuable. With the greatest respect, I do not think the opinion of officers of my standing and the senior ones are worth as much as that of the younger ones. I should like before this question is settled to see it thoroughly inquired into, and every one of the officers, especially lieutenants of a certain standing, carefully listened to. I am perfectly satisfied in my own mind how the question will go. There is, I think, a word of consolation to us. More than eight years ago there was a discussion precisely similar to this going on here, and my friend Sir George Willes, if I mistake not, used that argument which has been so repeatedly employed to-day. He said it is idle to talk about this matter; it is flogging a dead horse. All I can say is that the horse has been flogged for over eight years, and if I might make a quotation from a great man, I would say, "*Eppur si muove.*"

Captain A. C. CORRY, R.N. (H.M.S. "Camperdown"):—The lecture to which we have listened contained many points of the highest interest. But the main question with which it dealt was that excessively important one of the usefulness or not of the form of training vulgarly known as "masts and yards" as a factor in the production of the modern Royal Navy officer and seaman. You will have observed throughout this discussion one very general agreement which has underlain all our views. Opinions have differed on other points, but upon one there has been unanimous consent. We all agree that the particular form of *training* known as "masts and yards" does, when applied to naval executive officers, produce the best in the world. Upon this point officers whose view upon other matters differ diametrically are absolutely agreed. What does this admission mean? "Masts and yards," it is agreed, makes good officers. But how? How can the laborious handling for several months in the year of entirely obsolete spars and sails, the heavy and vexatious employment of a method of propulsion now absent from the fighting-fleet, produce good officers of that sort which the modern fleet most requires? Is it to be supposed that the mere fact that these officers are able, have laboriously learnt to be able, to conduct operations at sea, which in their final modern fighting places they will never by any possibility be called upon to conduct again, is it this that makes them more efficient in those modern fighting places? There are no sails to deal with. What, then, is his advantage over his comrades? There is, I venture to submit, a complete confusion as to the true and exact meaning of the word "seamanship." Now, "seamanship" may be taken to mean one of two things: It may be used to mean the mere handling of sails and spars, which is one thing; or it may be taken to indicate that set of qualities and those habits of mind which such handling has been invariably and universally observed to induce, which is another. The mast and yard training makes good officers, because such training has induced in them those habits of thought and qualities of mind which alone are, and ever have been, of first-rate value upon the seas and in battle. The confusion of thought here indicated is between the means and the end, between the apparently absurd handling of entirely obsolete methods of propulsion in Malta Harbour, and the attainment of those qualities of hand and eye, of thought and action which such a handling induces in the brains and methods of the handlers when so employed for their own interest in the safe conduct of a ship at sea. Seamanship is *not* the mere physical handling of masts and yards. That can be done by any donkey

engine. Seamanship, true seamanship, is a habit and quality of mind which, so far as experience goes, can *only* be induced by the constant care, forethought, and attention necessary to keep a ship safe under sail at sea, the using of the forces of Nature upon the sea, the husbanding of human resources and the supporting of human life meanwhile, and the constant unceasing attention, thoroughness, and judgment which the successful attainment of these objects will alone and always entail. The carrying out to thoroughness and perfection of the most ordinary duties of the day or night in a ship under sail at sea is in itself a training of the mind whose value nothing will ever alter. Its enormous usefulness at all times in naval history always has been and always will be impossible to overrate. *The requisites in man for battle never alter.* Ships and weapons change and decay, but fundamentally your strength rests upon your men. Patience, tact, observation, courage (moral and physical), will never be less valuable assets in a sea action than they have been in the past; and the habits of thought, of which these qualities are but the outward and visible sign, will win battles in the future as they have never lost them in days gone by. Ships may come and ships may go, but men remain for ever to win or lose the day. The question is how to produce these qualities in the men which all the captains in the fleets are agreed in applauding in the officer—those qualities whose presence and use render the sea safe and not dangerous, whose grave and steadfast employment recognises that in dealing with the forces of Nature there is neither forgiveness for error nor safety in erroneous belief. Fasten this view upon the mind of a man, drive into him the habit of the sea, which is the habit of courageous tact and patient self-control; graft on him, above all, the clear judgment, the power of balancing evidence, and the strong view which alone give a man any true title to the name "Executive," and whether you like it or not you have made a seaman who will stand his country in good stead. He has been moulded not by book-learnt theory or by shore-born views, but by the pressure of the sea. The average man-of-war's man nowadays does not apparently develop those qualities and characteristics with which it is stated that the old sailing seaman class became endowed. This must be so, of course. Qualities in man are the result of training. From different trainings, therefore, different qualities result. So true is this, and so undoubted is man's natural laziness, that it is only by bringing a considerable pressure to bear upon him that it has ever been found possible to induce those qualities which for any special purpose may be required. Man will do as little as he can. But Nature begins the work of regeneration by bringing considerable pressure to bear at times. Pressure, which alone can affect character, is of two kinds—natural and human. From the splendid effects of the former, no appeal is permitted. No argument will stave off any punishment it may have to award; no considerations of feeling or opinion of sentiment or conviction can alter the invariable justice of that punishment; no talk of rancour or revenge is permissible to sane men. "The mills of God grind slowly, but they grind exceeding small." There is no appeal from the effects of the pressure of Nature. Now, whichever of these two *forms* of pressure is employed, what is certain is that pressure of some sort is necessary to train men. And of the two sorts I submit that the natural pressure whose strength is in its certainty, and whose moral effect is dreadful far beyond that of any human pressure which would accord with modern notions, has far the better effect of the two; and that, if possible, it should be employed in preference to human pressure. The life of the seaman or officer on board a modern steam man-of-war is about as much hedged in by humanly-invented pressures as that of any man in the world. Not only is he amenable in the last resort to the ordinary laws imposed upon his countrymen, but he is surrounded by a network of highly artificial pressures which affect his smallest movement. Now, the effect of these pressures continued over a long period is to produce a certain set of qualities, good and bad. He comes in time to look at life and at his business from the

steam-ship and machine point of view, and he becomes, of course, daily more incapable of viewing his profession from any other point of view than that of the mechanic or mere artilleryman. The sea he may neglect. That is dealt with for him by the constructor and the engineer. The wind and weather are no concern of his; the engines drive him against both he knows not how. There is no need for him to know the capacities of every man upon the lower deck and every officer above him. The pressure that is upon him is a human pressure. Opinion enters, and it can be modified when required. It is a weaker thing than natural pressure, and produces a weaker character. Where, then, in the problem of naval training can we look for a natural pressure which shall set the habit of the sea into a man and harden him into a real fighting unit, whose habit shall be the sea habit, and whose qualities shall be those best worth having in the day of real sea trial? The answer to this is so simple as to be obvious to all. Natural pressure of the best kind can be, and is, found in the sailing-ship. The pressure upon the man who is engaged, in whatever capacity, in the safe conduct of a sailing-ship at sea is a natural pressure, whose strength is by no means generally understood, and whose value as a moulder of character has been most consistently and mischievously underrated. The sailing-ship for naval purposes is obsolete, but the qualities of head and hand requisite to keep a sailing-ship ready always for her battle with the elements, and which a sailing-ship alone can produce, are not obsolete and never will be. The care and attention, the watchfulness and resource, the holding to scientific first principles through all conditions of stress and disturbance, which are rendered absolutely necessary in a sailing-ship, are never called into play by the steam-ship during peace. But are they, therefore, of any less value there? Realise for one moment the effect of a sailing training upon men's habits of thought. Give the upper-yardsman of a sailing-ship a yard to fit, upon which they themselves will probably have to lay out. It is to each man's vital interest to see that that yard is soundly fitted. If any accident occurs through slackness, or inefficiency, how much sympathy is shown to the delinquent? I leave any officer who has ever dealt with men to answer. The man is punished by natural law, and every man in the ship is on the look-out that he too may not fall into the jaws of that law's punishments. And, if he does, then there is no thought of injustice, no rancour, no rebellion. It is his own fault; and everyone knows it. The pressure is always there. There is no appeal from it. It strengthens character. Moreover, it is the sailing-ship alone which can teach the lesson that, on board a ship, men's lives mutually depend upon the thoroughness of each other's work. This is true in the steam-ship as well as in the sailing-ship, though in the former its truth will not become apparent in all its force until the moment when the ship is in action; when it may be a little late. It is nevertheless a truth of the first and most instant importance, and, in the sailing-ship, is recognised and acknowledged to be so, as a matter of course. There it is at once seen that it is to the interest of each individual man to see that each other man does his work thoroughly; the interest of each is also the interest of all. How beautifully this object is attained by the natural pressures of the sailing-ship is well known to all who have taken any interest in this matter. Voluntary supervision of the most critical kind is given to all the important work of the ship, by which at one stroke the men's powers of observation are cultivated and the men are bound together in that firmest of all bonds—the bond of mutual self-interest and comfort. Trust in, and real knowledge of, each other is engendered, and ready self-sacrifice even, if need be, of life is made—since no man can tell at what instant his life may be saved or he save another's. This binding and looping of men together is an effect which it is absolutely essential to produce if men are to work together intelligently throughout the great day of trial at sea which cannot be very far off, and it is an effect which no amount of steam-ship training can ever produce. The reason for the superiority of the sailor is not usually so clearly seen as the superiority itself. It is said "that he is handier," "more resource-

ful," "stronger," "quicker," and the like. These he may be, and probably is. But that which makes his real superiority is *the point of view from which his training has forced him to regard his work.* It is not a mere collection of "jobs" to be finished and forgotten. He has seen the results of bad work. He has, perhaps, once done some; and if so, will certainly never have forgotten the consequence. In a steam-ship, so far as the seaman is concerned, things may go as wrong as possible without any serious moral disgrace and certain punishment attaching. Offenders may, of course, be punished, but the lower-deck thinks almost as well of them as it did before they scamped their work, and not they, but the mechanic and dockyard engineer, put right the consequences of their fault. The punishment which the man receives may breed unrest and ferment in his mind. In the sailing-ship the bill for bad work is presented to the man who has done it by inexorable Nature; and a broken limb or a lost life shames him at once before his fellows. The punishment is severe, indeed, but it does its work of strong formation of character with no possibility for rancour in the man's mind, no possibility of a question as to its justice or due extent. The man in the sailing-ship feels a grave appreciation of the importance of good individual work which is even more valuable in the modern ship in moments of real stress than it ever was, if possible, in the old purely sailing days. Surely in the discussions upon this matter, the end has been too much concealed by the means. Leave out the sailing-ship training, stop the employment of masts and yards, and you are driven back either to a training for seamen upon shore, or to a training, which is in truth but little better, in a steam-ship alone. Every day the former method seems to threaten us with a more complete adoption. But barracks and the manual exercise will be but a poor substitute for resource and the habit of the sea when England once more takes the sea with an ensign at each mast-head. Training on shore is now largely holding the naval mind; aye, but let us not forget that the last great fight of all will be not upon the shore, but upon the sea. And when the only bond of cohesion of the ship's companies shall have disappeared for good from the Navy, when the means have been long enough mistaken for the end, when electric buttons are in good truth more relied upon than the brains and hearts of the men who work them, and when, as a consequence, in that great fight, the soldier-thinking, shore-bred, shore-trained sailors shall be found perhaps to be a little wanting, regret will be unavailing. Surely, if in anything of this there is a grain of truth, or if, in fact, that captains are unanimous in their preference for sail-trained officers there is any significance, and if good officers make good men, or if good men can help good officers, it behoves us to hesitate long before letting go of this great lever by which *men* may be made. "Never let go of one rope until you have hold of another," is an old sea maxim. What is this other rope which we now think we have hold of? Is it not a rope of the sand of the shore? Another question which has been raised in this discussion is that of the necessity, possibility, and advisability of giving what is called "Executive Rank" to the class of officers now known collectively as the "Royal Naval Engineers." What is the meaning of the word "Executive"? Does it imply merely, as many persons seem to think, the wearing of more gaudy uniforms, the enjoyment of a higher social position, and the drawing of a higher scale of pay? If this is all that the Naval Engineers want, it is certainly not for me to wish to refuse it to them. But their claim to "Executive Rank" involves a far higher pretension than this. What is "Executive," and what are the attributes that it implies? It is a demand for power to "punish their own men." This matter is discussed as if anybody is competent to punish; the fact lies that no art requires a more searching and thorough training than the art of justly awarding punishment. The demand of Royal Naval Engineers is exactly like a demand that every employer of labour throughout the country should be allowed to exercise the functions which are now the exclusive property of the magistrate and judge. Punishment, indeed, mere punishment, the awarding, rightly or wrongly, of cells or other penalty, is the

easiest thing in the world. But *just* punishment is, equally, probably the hardest. To give a man ten days cells is easy enough for any man; *to weigh and balance the evidence* upon which he is to be, or has been, convicted is entirely another thing. The glory of the "Executive Officer" is that he shall be a man in whose hand sane and reasoning men will gladly place their lives at the moment of trial. If the Royal Naval Engineer officer wishes to do this and hopes ever to do it thoroughly, he will find that, in learning this trade, he will have but little time indeed left for acquiring also his own.

Rear-Admiral W. H. HENDERSON:—In common with Sir Frederick Richards and many other speakers who have taken part in this discussion, I wish to thank Mr. Thursfield for his interesting paper, presented as it is with all that literary grace and ability of which he is so much the master, with which, I am afraid, none of us can attempt to vie. He has put the onus of proof in this discussion on the supporters of sail-training, and his paper is a series of powerful considerations why we should pause before finally making a change. All these considerations, I think, can be equally powerfully answered. There is no time to do it *seriatim*, but I will try, in a general manner, to touch upon a few of the heads. No one doubts his premises; the perfection of the individual and the organisation is what we are striving for, and there is no doubt that the sailing-ship of the past welded the ship's company into an organic fighting whole. But what was that seamanship? It was rough, and the gunnery allied to it was rough-and-ready also. My experience is that the rough-and-ready training of ropes and spars is a bad training for the knowledge, delicacy, and care required in the manipulation of a modern ship. It was a centralised training. Officers and men worked together in large units under a single word of command. What we want now is the highest form of decentralisation, groups able to look out for themselves. In the Navy we have not moved in the art of rigging and sailing a ship since the days of Nelson, except to substitute wire rigging for rope. The old system of rigging ships has been maintained for the purpose of drill; the merchant seaman laughs at our obsolete and clumsy methods. Officer for officer, man for man, I consider, for the duties of the present day, are better than at any previous period—better than the men or officers of previous periods were for their duties. I am speaking now of my experience in the Service. Time throws a gloss over the actualities of the past. We are inclined to remember the happy incidents of our careers; we look at the very bright side of things, and we do not look at the disagreeables and the difficulties; whereas, when we are facing a question which affects us for the present, the difficulties are uppermost. There is a supposition also that we do not get sufficient sea-training. We do not want the sea-training in the steam-ship which was wanted in the sailing-ship. That is perfectly evident. A sailing-ship training is a training which requires as long an apprenticeship as any training in the world, and the question is, Is it possible to attempt to do it in the manner in which those who advocate it desire? The supposition also is that ships are not sufficiently at sea. Well, I think, with the exception possibly of the Mediterranean, where the limitations of distance, of politics, and other considerations come in, on all the other stations ships do now get sufficient time at sea to give the actual sea-training that is required in ships of the day. There is one consideration which the lecturer has brought forward which I should like to caution my brother officers against, although it is a very taking one. He has illustrated the effects of teaching the classics. Now, I should like to tell everybody that this question of teaching the classics is as much a disputed point nearly among pedagogues as the mast and sail training is amongst naval officers. You may remember that not many years ago one of our most distinguished headmasters, now Bishop of Calcutta, undertook a crusade against teaching Greek to boys who entered the modern side of our Public Schools. He said it was perfectly impossible for a boy honestly to take up the modern side of the school and take Greek, and he tried to get the Universities to make Greek an optional subject for

entry. The Universities went against him. The subject is not dead, and is bound to come up again. Quite recently I paid a visit to Harvard University, and its President, Dr. Elliott, who is one of the most distinguished men in the United States, told me that for some years they had made Latin and Greek optional subjects, one or the other, with marked advantage, and he added, "You will have to come to it on the other side of the Atlantic before long if you want to go ahead." I was told also that at Columbia University, although I did not go there, they have made both Latin and Greek optional. When we come to look back upon the past there are several things we have to consider. When I went to sea there was a body of men called the after-guard, and many petty officers were rated for their activities and not for their abilities or trustworthiness. Where the great amount of individual training came in was with the upper-yardsmen, and they form but a small percentage of a ship's company. Now I have very great sympathy with everybody who does not like to cut themselves away from the past. But it must be borne in mind that whenever scientific advance causes a change of system there will be very many great regrets, and that if we could only see what was in the minds of our seamen forefathers when the change to sails from oars came about, it would be found they were probably as much divided in opinion as we are now. The lecturer also says that in the merchant service they train afloat in sailing-ships. I ask, How long is that going to last? The mercantile marine has not arrived at the acute stage which we have. We have arrived at the stage when there is no masted ship in the Navy. In the mercantile marine the number of sailing-ships is decreasing, and there are still sufficient to provide a training for their officers. When the Nicaragua Canal is made I suppose that will be no longer the case, and is it to be supposed that the merchant service will provide training-ships to teach their officers? I think not. What are we going to put in its place? We must return to the homogeneous condition which our ships were in in the days of Nelson. Their complements were then practically all executives, and we have to be practically all executives in the future. We shall have to revise our training system both for officers and men from the bottom, not doing as our cousins across the Atlantic have done by beginning at the top. We must drive the ships as well as fight them, and we must gradually begin our training to that end. The training service requires re-organisation; we waste at the present moment an enormous amount of time for want of a consecutive system of training for the whole Service. We put our boys into the training-ships for two years, and when they come to sea we do not know what they have learned and we drill them over again. As soon as they are men they go back to be drilled in gunnery and torpedo establishments, and so it goes on to the end, without system or reference to training afloat and its possibilities. We may still keep brigs and may stick to the gymnasium part of training aloft, but let that training in the first instance be consecutive. Let seamanship come first, the gunnery next, so that when they come back as men we have not to waste the time we are now wasting in always having men in the gunnery schools. You ask for captains of the guns who can shoot straight. A captain of a gun is not made by practice, he is improved by practice, but it is natural aptitude which makes a gunner. If you have the whole of your ship's crew, marines, stokers, and all, to choose from as captains of guns, you get a better selection of good shots, when the day of trial comes, than you do now.

Lieutenant H. T. A. BOSANQUET, R.N.:—Captain Nicholson has stated so very clearly the case for the junior officers that there is very little more to be said. There is one point, however, that has not met with the attention that it should do, and that is the remark by Sir Michael Culme-Seymour that the young officer of the present day has deteriorated. Several officers have borne out this fact that the young officer has deteriorated, but nobody has said why. The officer of the present day is of the same stock as his predecessor: he is of equal, if not better, intellectual ability, and he is very much better trained. From the day he joins the

"Britannia" he is practically dry-nursed for about five years and receives a very complex education in gunnery and seamanship. There is only one difference in the training of the older officers and the officers of the present day, and that is, that the young officer of the present day has not had his schooling in sailing-ships. The older officers seem to forget what they owe to their training in sailing-ships. The young officer who goes to the Training Squadron for a short time and leaves it, feeling as the officer did in Mr. Thursfield's lecture, "50 per cent. better," realises the value of the training which he has received. What is true of the officer is true of the man, and it is only a question of time for the same deterioration which is now apparent in the officer to be apparent in the man. Admiral Culme-Seymour said it was proved that the men had not deteriorated, because the Naval Brigade at Ladysmith was as good as the Naval Brigade in the Crimea. But this is not a proof that they were as good *seamen*. The sailors of the Naval Brigade became for the time being soldiers, and it has been proved that a soldier can be made very much more quickly than a man can be made into a sailor. Our Yeomanry and Volunteers have borne that out. Training in mastless ships can only make a bluejacket into a marine artilleryman, and it is a fact that the Naval Employment Agency find they can get billets for marines as easily as they can for bluejackets, which was not the case some years ago. We are, as one officer said, living on the past, and surely we should take warning from the fact that our officers have deteriorated before we bring to pass the same deterioration in the men.

Commander the Hon. H. N. SHORE, R.N. (Retired):—It may seem almost superfluous for an officer on the Retired List to interpose in the discussion, but it is sometimes said that outsiders see most of the game; while the fact of having served in two wooden line-of-battle ships; two Flying Squadrons—to use the old term—and three ironclads, to say nothing of minor craft, must be my excuse for venturing to express an opinion. The point at issue, I take it, is not so much the value of the training afforded by masted ships, as, whether, having regard to the exigencies of the Service and modern conditions of warfare, we can afford to perpetuate that particular system of sea training. Now, it seems to me that in the endeavour to settle the question the chief factor has been eliminated altogether from the problem. The question has been discussed as if man was immortal. But, alas—or, thank goodness—there is a limit to human life. That we are mortal is a fact that must be recognised in any system of naval training. If people lived to the age of Methuselah, why then we might include every single branch of study that able men tell us is essential to the making of Navy seamen. But seeing that there is a limit to life, and moreover that the nation desires to secure the services of its fighting men while they are still in their prime, their training must be arranged with a full recognition of this craving for physical vigour. It is difficult indeed to conceive of anything more calculated to sap our naval supremacy than an undue extension of the training period. For, unless our officers are afforded the opportunity of rising to the higher ranks while in the prime of life and in full and unimpaired possession of their faculties, woe betide our fleets in the day of battle. The nation would gladly sacrifice a little educational polish—or, as some people prefer to put it, "scientific acquirements," in its seamen, if physical vigour, nerve, and resourcefulness can be guaranteed in time of stress. Remember the warning Sir Charles Napier uttered in 1840:—"Look at the age of the French admirals and ours; be assured some mischief will happen some day or other. At the beginning of the revolutionary war you must remember how the young French generals beat all the old Austrian ones; and we had better take care the young French admirals do not serve us the same." It is notorious that some of our most famous naval victories were marred in their results through physical exhaustion on the part of the admirals in command. Will anyone affirm that officers who are past their prime—gouty, livery, and dependent on bodily comforts—can get the best results out of modern fighting-ships? It is

pleasant to discourse on the advantages of a training under canvas; but it behoves those who would perpetuate this system to evolve a workable scheme for the consideration of the country. The nation otherwise can hardly be expected to commit itself to a system which, even its warmest admirers admit, will entail an enormous initial expenditure for the construction of the requisite ships, besides a heavy annual drain for their maintenance. The only attempt in this direction is a scheme roughly outlined by Rear-Admiral Sir Gerard Noel, in the *United Service Magazine* for May. There he tells us that, "for this purpose, two or three squadrons of six ships would be required, the ships especially constructed, with auxiliary engines and 12-knot speed." In addition, there would be "other masted ships, on foreign stations, to keep the young seamen abroad in proper training." No estimate of the cost is submitted; but we may assume that the scheme would involve an initial outlay of at least a couple of millions. A squadron of this description would further imply the employment of a large body of specialists for the purpose of carrying on the instruction—specialists well versed in the old-fashioned lore of ropes and canvas, but out of touch with the modern fighting machine. Perhaps, however, this consideration is not important, for Sir Gerard Noel tells us that "gunnery to the younger seamen is a matter of the utmost simplicity."[1] While as regards the officers he observes:—"To a captain who can handle a ship under sail properly, the handling of a ship under steam is child's play . . . to a 'seaman,' speed in modern ships is no difficulty, he rejoices in the power, and finds safety rather than danger in possessing it."[2] Still, I think, even Sir Gerard Noel would prefer to take his ship into action with officers and men who had had a few weeks' preliminary practice in gunnery and steam tactics, rather than with people who had been pitchforked on board from a sailing-ship. A 12,000-ton battle-ship, crowded with all the modern paraphernalia of fighting, running at a speed of 16 knots in a fleet, is scarcely a toy that can be safely trusted to inexperienced men. To carry out the system of training suggested by Sir Gerard Noel presupposes, however, a condition of universal harmony, such as the Peace Society aims at establishing. But is it safe to reckon on this ideal state of things? Can our enemies—and we have plenty—be trusted to wait until we have completed the training of our seamen before attacking us? Sir Gerard Noel evidently has his qualms on this point. He says "such squadrons never need be far from home in troublous times, and from them an equal number of war cruisers could be manned, within a few hours of the order being given." It is only necessary to carry our recollection backwards, over the last two years, to recall one or two crises in the Empire's history which would most assuredly have entailed just such contingencies as Sir Gerard Noel hints at. The last was deemed so serious as to involve the entire suppression of the much-admired Training Squadron. That particular squadron was happily, organised on a very humble scale. But what would have happened had the nation been in possession of its "three squadrons of six ships," to say nothing of the "other masted ships on foreign stations," with their full complements of specialists and young seamen under training? We may safely assume that, for the last six months at any rate, these eighteen specially constructed ships would have been swinging gracefully at their moorings in "Rotten Row"—their *personnel* scattered to the four winds of heaven. But what can be said in favour of a system that has to be suppressed at the first whisper of alarm? A scheme of training that involves an immense initial outlay, besides a heavy annual drain for the maintenance of vessels which are not only absolutely useless for war purposes, but constitute a positive danger; and which would certainly have remained in abeyance for the greater part of the last two years, is hardly a system that would commend itself to the "man in the street," much less to the chosen-of-the-people at Westminster. Their verdict would be that the game is not worth the candle. We all admire the old type of seaman

[1] *United Service Magazine*, July, 1891.

[2] *Idem.*

and the system that produced him. But it is surely incumbent on the advocates of the mast and sail system of training to enunciate a scheme that is not dependent on an *abnormal* condition of the universe. It is useless hiding our heads in the sand like ostriches, and presupposing a state of things which has no real existence. Wars and rumours of wars must be regarded as the chronic condition of the world. Moreover, arguments for the resuscitation of the old system, founded on the assumed deterioration of the modern Navy-man, ought to be received with caution. The Golden Age was ever in the past; and there is no more popular way of displaying insight than in the exaltation of the past at the cost of the present. That "the Service is going to the dogs" is a cry as old as the Navy itself. And when I hear people speaking in a depreciatory way of the modern seaman, I regard them with suspicion. For this, it is one of the first symptoms of mental decay, the sort of pessimism which accompanies gout and a disordered liver, and succeeds to the optimism and enthusiasm of youth. Ever since I joined the Service, some forty years ago, I have heard the same cry go up; and, no doubt, the same cry will ascend to heaven till the end of time. There is nothing so misleading as cut-and-dried comparisons of men at widely separated intervals of time. I will go further, and affirm that these comparisons are, in the majority of cases, absolutely worthless; for the simple reason that we have no fixed standard of measurement. We can scale the length and breadth of men, because the inch and the foot are invariable quantities. But the mind and the judgment, by which we scale the value of our fellow-creatures, are ever in a state of transition; they vary from day to day, and from year to year; and after the lapse of forty years differ so widely from the originals as to be hardly recognisable as products of the same soil. Hence, when the author of the very able paper under discussion asks, "Is the modern bluejacket as resourceful, self-reliant, quick in emergency, helpful in difficulty, and staunch in comradeship as his predecessor of the sailing-ship period?" and replies, "Splendid fellow as he is, the old qualities of the fighting seaman seem to be no longer what they once were, his natural and native inheritance," we need not trouble ourselves over much, for this is merely an echo of the old cry that "the Service is going to the dogs." For a man to be competent to scale types of humanity separated by intervals of forty or fifty years, he must have remained absolutely stationary himself during that period, retaining his physical and mental powers unimpaired. That the type of seaman has changed may be conceded. It was inevitable. We are moulded by our surroundings; and it would be absurd to expect the modern fighting-ship to perpetuate the type of fifty, or even forty years ago, and I am not at all sure that such a state of things would be desirable, were it possible. But a change of type does not necessarily involve deterioration, as some people would have us believe; and insinuations to this effect, in respect of the modern Navy-man, must be accepted with caution. It has always been the boast of the British Navy that its "fleet in being," that is to say its ships in commission, were in a state of readiness for war. But of what value would this boast be under a condition of things that sanctions the locking up of some 30 per cent. of our prime young seamen, with a large staff of officers, in ships which, albeit "especially constructed and of 12-knot speed," can only be looked on as seagoing gymnasiums? The most cogent argument, however, has been reserved for the last. From time immemorial it has been the custom of the British Navy to train up her officers and men in the ships, and with the very weapons they will have to handle in time of war. It is now, for the first time in our history, proposed to break with this tradition; and, with a view to perpetuating a type of seaman which will soon be as extinct as the Dodo, we are counselled to train our officers and men in a class of vessel and under conditions which even the warmest admirers of the system tell us will have to be discarded at the first whisper of war. The proposal is absolutely revolutionary. It strikes at the very root of that system which has been cherished from time immemorial; under which all our great victories have

been won, and our naval supremacy has been assured. Surely, then, it lies with the advocates of this revolution to prove its necessity, first of all, and then to submit a scheme, complete in every detail, showing how this revolution can be effected without endangering the national safety. In the opinion of many people who have given thought to the matter, the effort to perpetuate a vanishing type of man will prove as futile as attempts to clog the wheels of the universe. Every age of the world produces its own particular type; and it is useless fighting against the working of the great law of development.

Admiral T. Le Hunte Ward, C.B. :—I am sorry to differ from many distinguished officers whose opinions I have the greatest respect for, and yet I am unable to believe that the efficient training of the modern man-of-war's man should be made to depend on the handling of a ship under sail. I do believe that seamanship in its wider sense will exist to the end of the chapter, and that the nation which possesses the best type of seamen in the next naval war will hold the command of the sea. But by "the best type of seamen" I mean men thoroughly accustomed by constant practice from their youth up to the duties which appertain to navigating the sea with the latest modern appliances and the use of the latest weapons. In short, the modern seaman must navigate the sea under modern conditions, and cast aside all that is obsolete and inapplicable to those conditions. This is what may be called the *natural law* which governs the situation, and though it may not be always easy to see how to apply it, we may be quite sure that it is true, nevertheless, and we must accept it as such and make our theories accord with it. I think that the non-recognition of this truth is really at the bottom of our difficulty. Many of our officers see so clearly the excellent results which belonged to a bygone era that they are still hankering after the departed glory, and consequently cannot set to work to build up and elaborate something quite new. The chief point of value in the old system of sail drill was the healthy emulation which it excited amongst the seaman of the fleet, emulation strong enough to make men proud of their ships, or really angry if they could not be proud. It is quite true that the pictorial effect which went so far to produce this healthy pride is gone for ever, but the essence of the thing remains, and if not seen must be known and felt. Who can doubt that the same officers who have by their extraordinary energy enabled a healthy rivalry to arise out of so unsightly and prosaic an operation as coaling will, when they set their minds to it, develop equally useful results out of all the departments which comprise the many duties of our modern Navy. I take coaling as a typical example, and this has become almost glorified by the energy and ingenuity which our executive officers have contrived to throw into it. And if this can be said of coaling, how much more may emulation be excited by shooting with great guns at sea under conditions assimilated as nearly as possible to actual action and with small arms at the appointed ranges on shore? Boat work under oars and sails affords opportunities of development to an extent hitherto very imperfectly realised. It is far from creditable to the British Navy that the rowing of our sailors should be so open to adverse criticism as it is. Without confounding river rowing with sea rowing, no one denies that the analogy between the two holds good, and that the natural tendency of an uninstructed oarsman to use his arms alone, thus losing 50 per cent. of the power that ought to be used in propelling the boat, is as true at sea as on a river. As long as the boys in the training-ships are taught to row by old petty officers, who are themselves ignorant of the proper form of an oarsman, so long no material improvement can be expected in this matter. I only mention that as an example. I need not enlarge upon the possibilities of development which all the useful work of a modern ship is capable of. Once let our officers recognise the fact that masts and yards are not only impossible anachronisms in a modern ship of war, but that being so they can be no longer usefully employed in the training of our seamen for their duties on board, and they will then use that splendid energy and zeal which is unsurpassed by any body of men in the world, in developing to an extent

hitherto scarcely dreamt of all the useful branches of instruction which go to make up the training of the modern man-of-war's man.

Mr. J. R. THURSFIELD, in reply, said :—It would be quite impossible for me in the time remaining at our disposal in any sense to review the debate that has taken place to-day, and it would be rather difficult to do so, because it is my privilege to reckon the majority of the speakers as friends. At the same time, I will venture to say that the arguments of one side have very fairly neutralised the arguments on the other side, and, therefore, it is less necessary for me to estimate them at any length. I may express extreme gratitude to Sir Frederick Richards for the very weighty opinion he has given, and I trust it will be known more generally than in this theatre that Sir Frederick Richards was of opinion, and is still of opinion, that so far from the old Training Squadron ceasing to exist, it ought to be revived as soon as possible and at least doubled. That is a most important and weighty expression of opinion. I also thank my friend Commander Nicholson and his contemporaries in the Service, Commander Napier and Lieutenant Bosanquet, for the very valuable expressions of opinion we have had from them. I think it a most important thing to know what we hear from Commander Nicholson, that nearly every one of his contemporaries in the Service is at variance with the very important opinions expressed by such justly respected authorities as the Commander-in-Chief at Portsmouth and the Commander-in-Chief at the Nore. But there is only one thing I think I can say in bringing the discussion to a conclusion, and that is, that I entirely concur with my friend Rear-Admiral Johnstone, that the result of this discussion must be to convince the rulers of the Navy across the street that the question has not been settled by the temporary disappearance, as Sir Frederick Richards described it, of the Training Squadron last year. I have good reason for saying that at the time the Training Squadron disappeared, the idea across the street was that there was no one in the Service who minded about it at all, that it was the most natural thing in the world that it should go, that it had done its work, and that nobody expected it to be revived again. We stand in a very different position indeed to-day. We know from Mr. Goschen's own statement that the question is open, that a most profound division of opinion exists in the Service on the subject, and that the question cannot be settled without full consideration. That is all I have ever desired. It has been represented again to-day that I am an advocate for masts and sails. I thought I had sufficiently explained that that is not my position at all. I want the question thoroughly, fully, patiently, considered and thought out. When that is done I shall be quite content with the verdict of the Service on the subject. It is not for me to decide the question in the least. I am very grateful to the members of this Institution and to so many respected chiefs of the Service for having taken part in this discussion, and there is no doubt a great deal more to say, which I wish it was my privilege to say myself; but after so long a discussion I can only say that I think the main object has been secured and that the question will not be now regarded as decided until it has been thoroughly considered.

The CHAIRMAN (Admiral Sir Anthony H. Hoskins) :—I believe it now devolves upon me to sum up the discussion, but in doing so I may at once avow that I am a very warm advocate of a sailing squadron, and, therefore, what I say will be coloured by that premise. We have had a most interesting discussion. I think it was quite time that the two conflicting opinions of the Service on this subject should be threshed out and brought face to face. On the last occasion there was a great deal of declamation and as little argument as I ever heard imported into a discussion. The question was called one of masts and yards, which I deprecate altogether. I prefer to look at it, as Sir Gerard Noel very properly pointed out on the last occasion, as a question of sending youngsters to sea in a sailing squadron for sailing purposes. There were very strong opinions expressed, but there were no grounds given in support of them, and they were expressed with a vehemence which I must say

surprised me. It is a question which should be fully weighed and considered, and then acted upon by the Admiralty. Sir Frederick Richards, I think, touched the whole point when he showed what the training of a youngster was. On the one side, we have the system of training that has hitherto been in vogue. The youngster commences in the harbour training-ships, then passes into the brigs, and then goes into the Training Squadron for practice at sea, and is sent abroad to see what the world is like, to open his mind, and to give him that training and that knowledge of a sailor's life and a sailor's surroundings which nothing else can do. I think that is a very important thing. But I think that the opponents of a sailing squadron have conjured up a giant which they tried to demolish without any reason whatever. They think that the advocates of a Training Squadron want to make a very undue proportion of the Service afloat into a Training Squadron. It is nothing of the sort. It is, as Sir Frederick Richards said, the giving a youngster his early training. There is plenty of time and room for training in and knowledge of the ships in which they have to serve to come afterwards. It is simply to finish off the lad's primary education in the training service for six months or so. It was a question whether it should be six months or a year when I was at the Admiralty, and we decided on six months because we wanted to pass the greatest number through. The opponents of the Training Squadron have raised a regular bugbear about it. On the other hand, if you do away with the Training Squadron, you ought, logically, to do away with the whole thing, the brigs, the mizzen-masts, and everything except school in the training-ships, and gunnery, and, perhaps, the pulling of boats. Then where are you landed? You will have these youngsters going to sea as they are going now. From these harbour training-ships they will be drafted to the depôts, and they will be doing nothing but dockyard work, or, at the most, going to ships abroad, principally in the Mediterranean and Channel. What do they do there? Have those present realised what the life on board one of our line-of-battle ships is at present at sea and in harbour? When they go to sea they do absolutely nothing except a few drills and gunnery, and clean the ship, and all the rest of the time they are lounging about with little or nothing to occupy them. I challenge anybody to deny that. When I commanded the Mediterranean Squadron I gave much time to the matter, thought the thing out, and made much enquiry, and that was the conviction I arrived at. I said we go to sea to do nothing and come into harbour to march about the Corradino. Is that the training you want the men to have?—because that is what they get and nothing else. Then with regard to gunnery, I should like to touch upon that question. There is a very exaggerated idea of what gunnery is. We know that in some respects it is a very high and scientific art, and it is said we must teach gunnery; but do you teach gunnery? You teach a great many gunners and you pass a great many through the gunnery school, and there is plenty of time to do that after they have gone through the Training Squadron; but what you want is the very highest training in the art of shooting—but can you teach all the men to be excellent shots? I say you cannot, and you cannot get the ammunition to do it. "The man behind the gun" is a phrase I am rather sick of. He is employed principally in working winches and levers. Now, is it not much better that they should go to sea and have the advantages which have been pointed out so ably by the lecturer? Is it not much better they should go to sea as youngsters before they go into that sort of life? There is another point which has not been touched upon, and that is the training-ships in the Mediterranean, and Sir Michael Culme-Seymour himself advocated the institution of another in the Mediterranean in order to take the ordinary seamen to sea and give them the advantages we claim for the Training Squadron. Why did he do that? Why is he not consistent and say that all those men ought to be on board their own ships all the time, the ships in which they will have to fight? I consider that the whole thing is entirely exaggerated. The opponents of a sailing Training Squadron have erected a bugbear which they

wish to demolish in the shape of this squadron. The question is one of proportion, and that is a fact we have very much lost sight of. The whole thing ought to be worked out in the most careful way by the strongest committee that the Admiralty can institute. The proportion between the youngsters sent into the Training Squadron and the total number serving generally should be worked out, and it should be recognised that the squadron is no longer kept up on sufferance. Speakers have pointed out that the Training Squadron is a half-hearted sort of thing. That is because nobody knew whether it was going to last or not. It has always been in a state of unstable equilibrium. I remember Lord Kelvin once saying to me "There is nothing in science that is worth anything whatever that you cannot put into numbers." I say, work out the numbers that you can possibly train and see what proportion they bear to the general service. I am quite certain that if they approach anything like the numbers given by the lecturer, 30 per cent., even that is well worth having, on the principle that they will leaven the whole lump. But when you come to the young officers I do not see how the naval officer is going to exist if you do away with it. If you have no training of that sort what will be the natural result? You will have nothing but marine artillerymen. You may disguise it as you like. You may put them in serge frocks or in blue jackets, but if you do away with the whole course of training such as they have at present, or they had until lately, you will have nothing but marine artillerymen going to sea, and where is your naval officer going to be then? He will almost necessarily cease to exist, at least such as we understand him. I have now said all that occurs to me, and I will conclude by remarking that I am sure you will all join with me in a most hearty vote of thanks to the lecturer for the most able paper that he has read on this subject, and for taking upon himself the starting of what I think will be a most useful discussion to the Admiralty and to the Service.

The following remarks on Mr. Thursfield's lecture have been forwarded by Captain Sir J. COLOMB, K.C.M.G., M.P. (late R.M.A.):—

My Parliamentary duties compelled me to leave before I had the opportunity I desired of joining in the adjourned discussion. The Council have been so good as to afford me the permission of otherwise offering the observations I intended to make. I append remarks taken from my notes at the time. This lecture strikes me as a most able judicial summing-up of the evidence advanced by each side. I see no bias in it. Personal proclivities perhaps peep out, but only to furnish pegs on which to hang arguments either way. The root of difference of opinion seems to me to be the difficulty of settling what is a "seaman" in these days of machinery and mastless ships. There is, however, a common agreement that men to fight the ships must be more at sea than they are, and that the "man behind the gun" is the determining factor. But the *personnel* must be maintained in much greater numbers than the ships in commission on the ordinary peace establishment can accommodate. How, therefore, to keep bluejackets more at sea is an administrative question covered by the terms distribution and organisation. These matters, however, are beyond the range of the subject under discussion, though I cannot forbear referring you to "The General Principles of Naval Organisation" I submitted so far back as 6th March, 1871, in a lecture before this Institution. Now, taking the common ground of agreement as to the "man behind the gun," does not the issue become a narrow one? viz., whether the masts and yards education is or is not a necessary preliminary to perfection in a "sea-gunner." That appears to me to be more a matter for practical demonstration than theoretical argument. Why not have a series of practical and exhaustive experiments tried? The competition would have to be on perfectly even terms between "seamen-gunner" bluejackets who have been through the Training Squadron and "sea-gunner" bluejackets who have not. If it turn out in favour of the "sea-gunner," then further

competition and experiment should decide upon the relative merits of the "sea-gunner" bluejacket and the marine artillery "sea-gunner." The survival of the fittest would determine the nature of the training best suited to produce the best "man behind the gun." I confess I don't believe mast and yard training to be necessary for the "man behind the gun." Plenty of sea experience and constant practice at moving targets are essential, and no money should be spared in giving it. I cannot let Mr. Thursfield's reference to marine artillerymen pass unnoticed. He says, "Eliminate the sea from the fighting seaman's experience, and you get the marine artilleryman." But I say if you eliminate the sea from the marine artilleryman's experience, you get a land artilleryman pure and simple. Is the difference between a "bluejacket sea-gunner" and the "marine sea-gunner" simply only a matter of sea experience? Or is it a matter of difference of training? If it be mainly a matter of sea experience, then recollect at the present moment the non-commissioned officers of the Marine Artillery have probably more sea experience than the petty officers of the Navy. The illustration of the marine artilleryman who "could not pull a trigger" puzzles me. I understand every marine artilleryman has to practise from a moving platform—that is, from a gunboat—as part of his course of training. I pay no heed to the illustration as proof of any principle, but simply wonder if, after he had acquired sea experience, and been afforded opportunities of constant practice, he became a crack captain of a gun. So much for "men behind the gun." But how about the officers to command and handle ships? Under ordinary conditions, I believe the handling of modern ships to be a simple matter of observation and practice. But under extraordinary conditions, such as a fleet action, I conceive it to be of the very greatest importance that captains of ships should possess in the highest degree the capacity and quickness to appreciate sudden changes of circumstances and conditions. The cultivation of aptitude to make the best of the unexpected and to take a decision in a moment is, I think, essential. I believe myself sailing experience affords the best opportunities for the cultivation of the faculty of quickness of perception. I have, therefore, still an open mind on the Training Squadron question in respect of officers who are to handle ships. I think a first-class artillery or torpedo officer may not be a first-class handler of a ship, and *vice versâ*. I also think an officer coming from a torpedo-destroyer flotilla may find himself a 50 per cent. better man than before—just as much as the officer referred to as declaring himself 50 per cent. better after service in the Training Squadron. This question of officers' training seems to me to resolve itself into training squadron *versus* torpedo-vessel flotilla.

THE RANGE QUESTION.

By Major H. T. CROOK, 1st Lancashire R.E. Volunteers (M.Inst.C.E.).

Wednesday, 14th March, 1900.

Lieut.-Colonel EUSTACE J. A. BALFOUR, Commanding 7th Middlesex (London Scottish) V.R.C., in the Chair.

LAST session, in reply to a question in the House of Commons, the Under-Secretary for War said that since the Lee-Metford rifle had been issued to the troops, sixty-four ranges held by the War Department at home and abroad for Regulars and Militia have been closed, and only forty-one suitable for the range of that rifle have been constructed or approved, and that of those held by Yeomanry and Volunteer corps five hundred and eight ranges have been closed, and only one hundred and sixty-seven constructed or approved. These figures are startling, and sufficiently indicate the importance of the question. The new ranges constructed or approved are however mostly of a greater capacity than those for which they have been substituted. Especially so is this the case with the Volunteers. Some of the largest of these ranges have been made by corps in combination, one new scheme taking the place of two or more old ranges. The seriousness of the problem presented by these figures is therefore somewhat reduced, but after all allowances the accommodation still lacking is very large.

In a thickly populated and highly cultivated country like ours the ideal of easily accessible ranges for every town and village is impossible of realisation. But there is no doubt that there are many more safe sites within comparatively easy reach even of populous centres than is generally supposed.

The discovery and utilisation of these depend largely upon whether they chance to come under the notice of anyone possessing a knowledge of what constitutes a good site.

The Official Regulations (Musketry Regulations, 1898, Rifle Ranges, Section, 231, *et seq.*), although greatly improved in recent years, are not only vague, but set forth conditions which are seldom complied with, and which would put out of consideration or limit the accommodation of sites otherwise suitable and commodious. It is desirable therefore that the requirements of good sites should be better understood, and the regulations put upon a common-sense and scientific basis.

The "scare" which was created on the introduction of the new weapon by the exaggerated description of its powers still prevails, to a large extent. The laying down of theoretical symmetrical "zones for safety" is apt to cause property owners and others to think that by the mere fact of inclusion within that line the area embraced is thereby

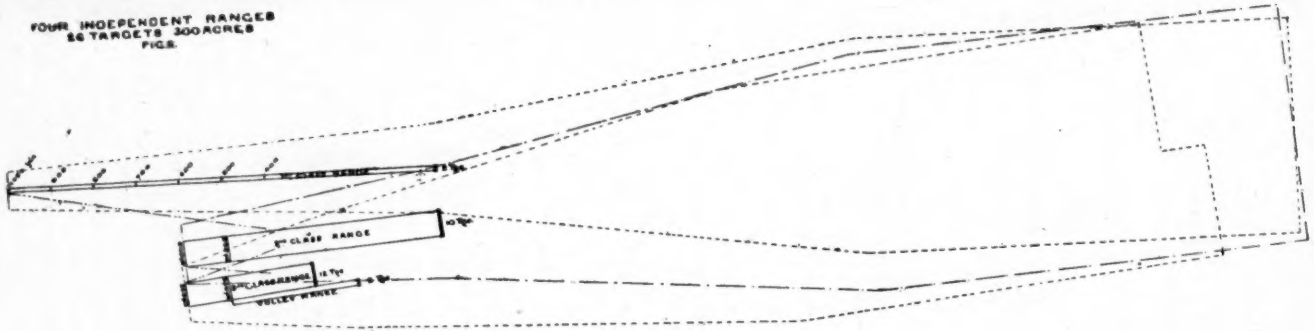
rendered insecure. Of course it is ridiculous to suppose that a definite line can be drawn inside which is danger and outside which is safety, though the official mind would sometimes seem as if it acted upon that assumption, and that bullets would not have the audacity to contravene sections and paragraphs of the Regulations.

Land being the principal factor in the cost, it is most important that ranges should be so located that the maximum accommodation is obtained with the minimum quantity of land. This even under favourable circumstances must be considerable, but the larger the range the less land required in proportion to the accommodation given. It is large schemes that are required. A small range of one or two sections available perhaps only up to five hundred yards will require as much as sixty or seventy per cent. of the area necessary for a group of ranges of all classes. The dimensions given, in Section 234 of the Regulations, as required where the site is level involve the purchase of, or control over, two hundred and four acres of land outside the actual site of the range itself so that a ten-section range of sixty yards width requires, on a level site, about two hundred and forty-one acres of land as a minimum, that is, thirty-seven acres for the range itself and one hundred and two on either flank for safety.

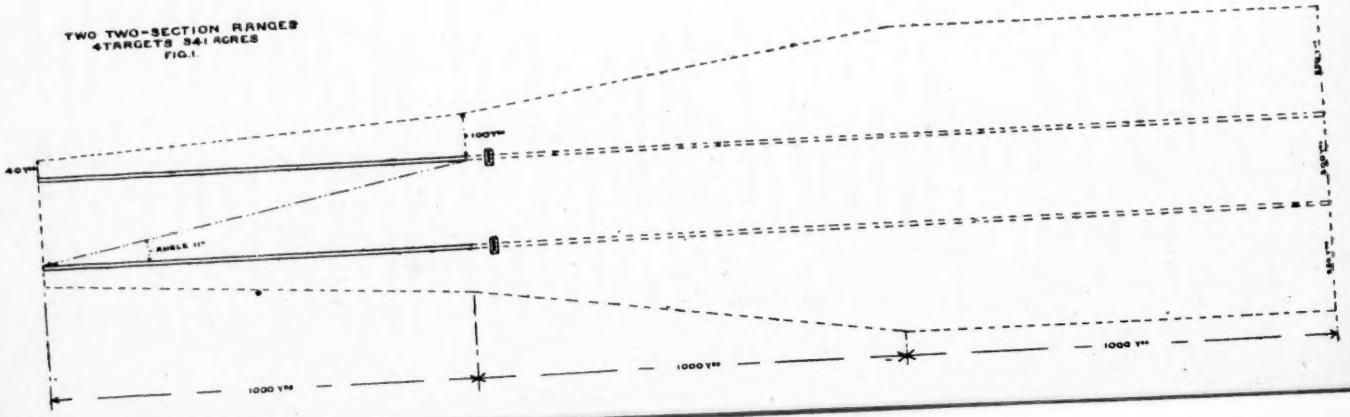
But if full use is to be made of a site, independent ranges are essential. Simultaneous practice at different distances must be possible. If the ten sections were laid out as two independent five-section ranges in compliance with Sections 234 and 240, an additional ninety-three acres would be required if the ranges converged, or one hundred and twenty-four if parallel, making in the one case a total of three hundred and thirty-four, and in the other of three hundred and sixty-five acres. It must be remembered, too, that these are the minimum areas required for safety. Land will also be required for shelters, stores, etc. Further, it is hardly ever possible to buy just the particular shaped piece of land wanted. It is seldom that a particular holding or the fences thereof will coincide with the boundaries of the "zone for safety." At the prices generally demanded for land, even of the poorest description, the cost of schemes requiring such large areas of ground is rendered prohibitive. These large areas of land are, however, really not necessary even on a level site, they are only required by a literal reading of Section 240. It is difficult to understand for what purpose this regulation is retained; so long as it is retained, perfectly safe projects are liable to be condemned, and it sometimes has stood in the way of really good sites being fully and economically utilised. It was framed for the old-fashioned iron targets with separate mantlets, so that two or more ranges could be worked quite independently and with safety; that is, the markers might be out examining targets on one range whilst firing at one thousand yards was proceeding on the other. The margin given for safety is two hundred yards to the flank at one thousand yards distance, or one unit of lateral interval to five of echelon depth; or the angle allowed for the divergence of a wild shot is 11° (Fig. 1, Diagram No. 1). With modern gallery ranges danger to markers on the adjoining

DIAGRAM Nº 1

FOUR INDEPENDENT RANGES
24 TARGETS 300 ACRES
FIG.2.



TWO TWO-SECTION RANGES
4 TARGETS 341 ACRES
FIG.1.



range does not arise, and it is only the safe simultaneous use of the firing positions on the independent ranges that has to be considered. So long as firing positions to be used simultaneously on different ranges are kept outside the lines projected at an angle of 11° from the most rearward firing position, we have exactly the same degree of safety as is provided by the two hundred yards interval at one thousand yards. The lateral allowance necessary for safety must obviously diminish as the depth in echelon of the firing positions on the respective ranges, otherwise we should be driven to the absurd conclusion that two hundred yards interval is required between firing positions actually in line with one another, as well as that twice the margin for safety is required between ranges as is necessary on the outer flanks for the safety of the public. This is rather curious, but it is a fact. An angle of divergence of 5½° is considered sufficient to secure the safety of the public, whilst an angle of 11° is required to secure safe working of two parallel ranges. It is seldom that independent ranges are required to be of equal extent.[1] In modern schemes, usually, 1st, 2nd, and 3rd Class independent ranges are, if possible provided. If the 11° margin for safety beadopted, it is possible on a level site to provide a two-section 1st Class, a ten-section 2nd Class, a twelve-section 3rd Class, and a two-section volley range on very much less ground (Fig. 2) than was required for the two two-section ranges shown on the old official diagram (Fig. 1); the area for a complete modern range of twenty-six targets in the one case being three hundred acres, in the other for four targets only, three hundred and forty-one acres.

Background.

Passing on to the question of background. Whatever the actual length of the range itself, the Regulations require two thousand yards length of ground beyond the targets where the site is level, stating that "less distance, however, will be sufficient if a steep hill rises in rear of targets."

Except in remote districts, often difficult of access, it is rare to find in this country a strip of land three thousand yards long which is free from buildings and not crossed by some more or less important public rights of way. The provision of the necessary land being, as a rule, by far the largest item in the cost of range schemes, it is most important to so locate ranges that the maximum accommodation shall be obtained with the minimum amount of land. Unless a sea range can be procured, the most desirable qualification of a good site is a hill background, and therefore it is necessary to know how to estimate what is the value of any particular hill background. Here the Regulations give us no assistance. There is not even a hint as to how the respective values of the elements of a background, height and distance, are to be arrived at. It is merely remarked that "each case must be considered on its merits." Anyone who

[1] I have thought it well to retain the old designations 1st, 2nd, and 3rd Class Ranges, although not officially recognised they are convenient and well understood just as 1st, 2nd, and 3rd Class Targets, which, curiously enough, are officially recognised.—H. T. C.

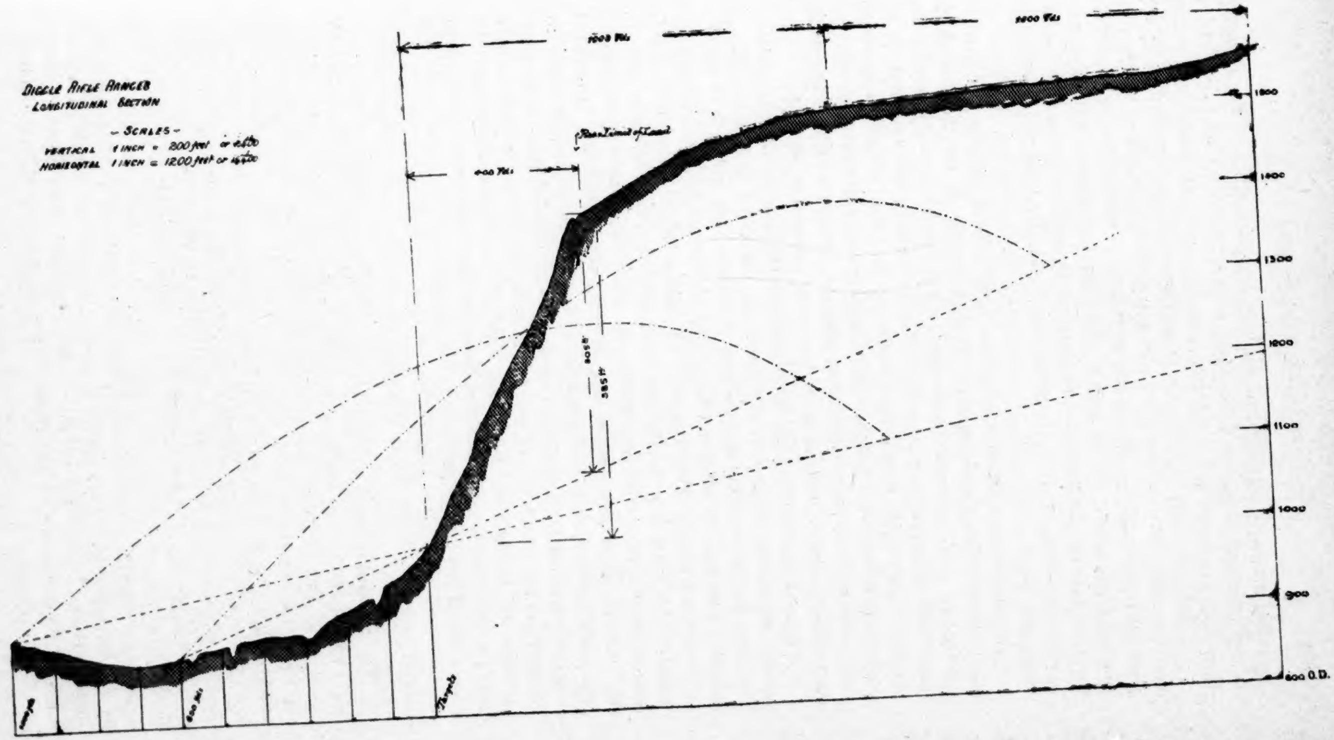
has to consider range site problems must therefore invent some method for determining the relative "merits" of sites some standard or rule for determining the actual value of any given formation of the ground in rear of a particular range site. Section 234 of the Regulations says "when the site is level, the length of ground behind the targets should not be less than two thousand yards." Presumably this is based upon experience; that it has been found that under ordinary range practice conditions, shots do not fall beyond this distance. This is tantamount to assuming that no rifle will be fired at a higher angle than that required to send the bullet two thousand one hundred yards, that is from the one hundred yards firing position to the rear limit of the land acquired, otherwise ground beyond the two thousand yards would come under direct fire. In other words, the maximum deviation allowed for, in the vertical plane, for wild shots is $5\frac{1}{2}^{\circ}$ above the line of sight from firing point to target. Under normal circumstances I think this allowance is sufficient. It is impossible to lay down a hard and fast rule as to the horizontal distance required. So much depends upon the nature of the country, whether populous and traversed by roads and paths, or the reverse. In the first case, the quality of the surface of the ground in regard to ricochet becomes of supreme importance in determining the amount of land required. It is, however, quite practicable to state what are the relative values of the vertical and horizontal components of safety.

If we plot the trajectory of two thousand one hundred yards on a longitudinal section of the ground we shall find the distance in rear of targets required, on rising or falling ground, to give the same degree of safety from direct shots as the two thousand yards does on the level. The point were the two thousand one hundred yards trajectory strikes the ground will give the rearward boundary. Or the rule may be stated thus: Given proper precautions against ricochet, the distance required behind targets is that which lies between them and the point of intersection of the ground line and the trajectory of two thousand one hundred yards from any given firing point.

The effective value of a hill in rear of a range as a screen or stop butt is not the difference of its level over the target galleries, but its height above the prolongation of lines drawn from the firing points to the targets on each range, and these are the bases from which the ordinates of the trajectory must be plotted.

As a rule, the difference between the actual height and the effective height is much more than would at first sight be expected. The slope of the ground from the apparent foot of a high hill or the slope of the bottom of a valley in a mountainous region is generally much greater than it seems to the eye. Even experienced persons have been surprised at the reduction of an ostensibly good background when the actual facts have been displayed in diagrammatic form. But after all allowances on this account any considerable rise has an immense effect in reducing the quantity of ground necessary to be taken. In the case shown on the diagram (No. 2), where the conditions are favourable, the rear limit can

DIAGRAM No 2


DIGGLE RIFLE RANGES
LONGITUDINAL SECTION
– SCALES –
VERTICAL 1 INCH = 200 feet
HORIZONTAL 1 INCH = 1200 feet
1000 Yds
400 Yds
800 Yds
Targets
1500
1400
1300
1200
1100
1000
900
800 O.D.

be safely drawn at four hundred yards in rear of targets, or the reduction of acreage requisite would be sixty-four per cent.; that is, instead of three hundred acres being required, one hundred and eight would suffice.

Conditions very similar to these prevailed on the Diggle ranges constructed in 1897, where there are twenty-six targets, which can be used simultaneously, and the area it was necessary to acquire does not exceed one hundred acres. In the case of the Crowden ranges opened last year the acreage is two hundred and forty-two with twenty-nine targets, shortly to be increased to forty targets, which can be used simultaneously. (Diagram No. 6.)

As may be seen from the various longitudinal sections exhibited, it often happens that the slope of the ground lessens as the distance from the foot of a hill increases, consequently the conditions for safety on the same range may be better at the longer distances than at the shorter. Several ranges which were closed when the Lee-Metford rifle came into use have been re-opened for the shorter distances, and thus it is that the curious anomaly is sometimes met with of a range on which the safer distances are closed and the more dangerous allowed to be used.

There is another consideration affecting the amount of land which it may be desirable to take in any particular case, and that is the kind of practices which it is proposed to carry out upon the ranges. It may be assumed now that in all new schemes provision will have to be made for collective practices. For any kind of volley firing I should certainly increase the allowance for lateral divergence between firing points in echelon, which means either a greater amount of land or a reduction in the number of targets which can be used simultaneously. Increased precautions according to the character of the soil will be required against ricochet, particularly if moving, vanishing, and surprise targets be used. Where running, attack practice and field firing are to be indulged in, then each site will have, as the Red Book says, "to be judged on its merits," and in some cases the full extent of the regulation requirements as to land in rear would not ensure safety.

Ricochet.

The amount of work to be done for any particular site in the way of stop butts, mounds, and scarping necessarily depends so largely on the character of the surroundings and the nature of the ground that it is impossible to lay down hard and fast rules. So far as stop butts are concerned, there is little to be added to the general instructions laid down in Section 235 of the Regulations, except to say that works of this class are expensive in first cost and difficult to maintain. Due weight should be given to these considerations in judging of the relative merits of sites.

But the second paragraph of Section 235, dealing with scarping is, to say the least, inadequate, if not erroneous. It reads:—"In some cases the targets can be so placed that the nature of the ground immediately in rear of them will render the construction of a stop butt unnecessary;

in which case, to be of use in stopping bullets, and thereby ensuring the safety of the public, the ground immediately in rear should rise at an angle of at least 45° ; if at a smaller angle, it should be scarped ; if this is not done it would, instead of acting as a stop butt, increase the chance of ricochets, and therefore be unsafe."

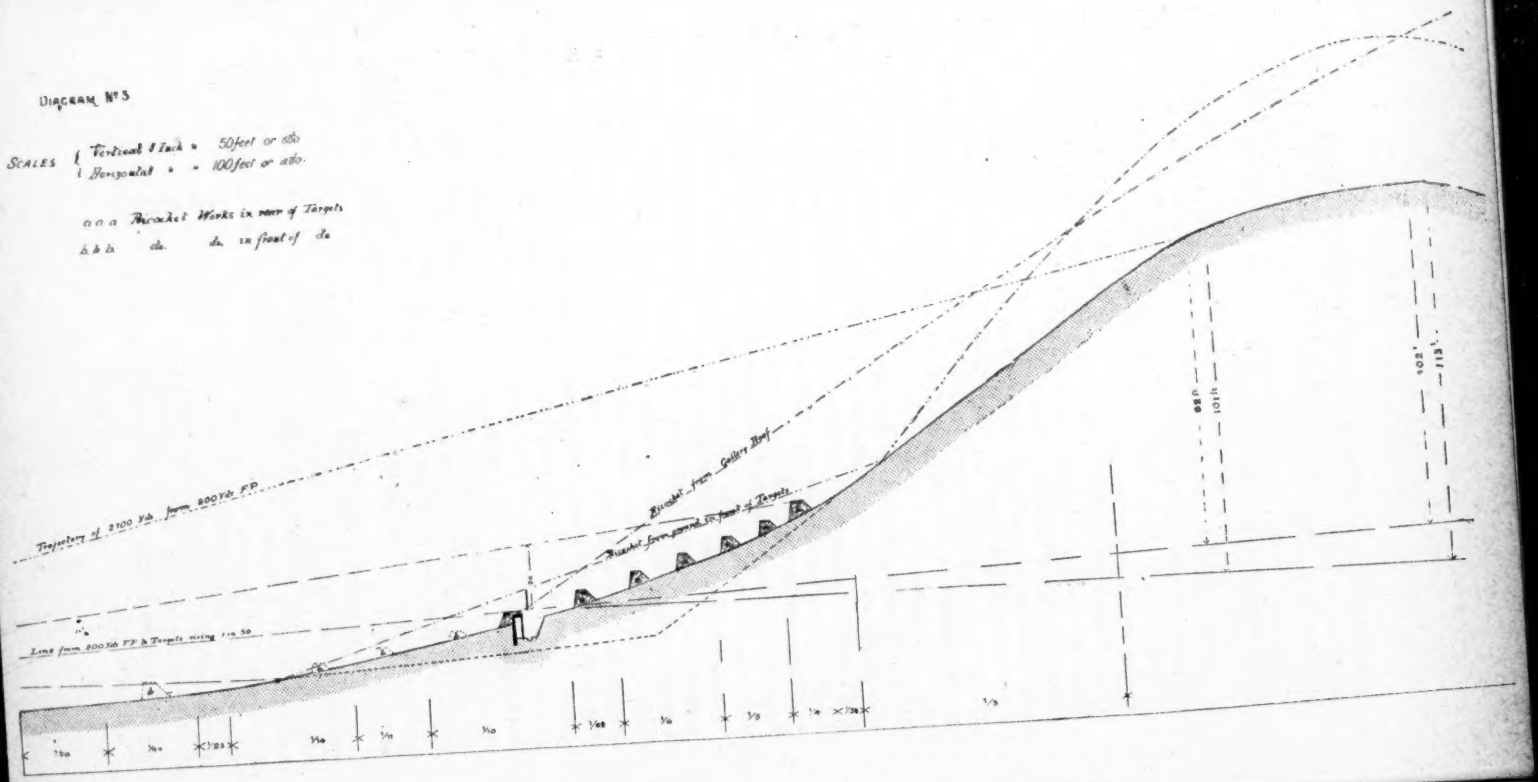
In the first place, this would seem to imply that slopes of 45° or one to one and upwards are frequently to be found in nature, whereas everyone with an elementary knowledge of ground forms knows that, except in the case of rock and a few kinds of hard marls in river and sea cliffs, they are seldom if ever met with. Slopes of one in two and one in three are exceptionally steep for any kind of soil suitable for the background of a range. These are the kind of slopes which are popularly supposed to be 45°, and are generally so represented by artists. At the foot of a hill, where targets are generally placed, there is often a talus of loose material sometimes abounding in springs, where tampering with the surface is liable to cause slips, which are troublesome to deal with, as they may fill the target trench with *débris*, which will have to be removed, and involve the cost of repairing the background for the reception of bullets (Diagram No. 3). It is usually in such cases better to build a series of small mounds of sods, on contour lines, one above another, each slightly overlapping the one above, or below, and running out well beyond the outer sections of the range. The ground in front of the targets and the earth facings of the gallery deserve quite as much attention as the ground in rear. The Regulations however say nothing about them. It is not unusual to find elaborate precautions taken to prevent ricochet from a safe slope of one in two and a half behind the targets, and nothing whatever done with a dangerous slope of one in ten or less in front of the targets, whilst the earth covering of the gallery roof may be at an angle with the path of the bullets, or the top of the bank protecting the markers has a metal, or other hard edge, only a few inches below the bottom edge of the targets. Any of these may produce ricochets which rise high enough after graze to pass over the mound or scarping in rear of targets, and after second graze over a hill background of considerable height which would otherwise have ensured safety. For on the second graze the bullet may be still rising and impinge upon the ground at a suitable angle (*vide* Diagram 3). Under such circumstances rising ground in rear of the targets may increase the chances of ricochet, but to imply, as the regulation does, that the existence of rising ground in rear is more dangerous than its absence is absurd.

The very best designed ricochet works are worse than useless if not maintained, as they then only give a false sense of security. It is not easy to maintain mounds and banks in front or rear of targets without timber facing. A single season's shooting will cut an embrasure through a four-foot sod bank on a third-class range. The lateral width to be protected is not great, about three feet, and in the vertical plane the damage is mainly within six feet, so that three railway sleepers fixed vertically in the face of the bank on centre line of targets will keep it in form. It is also well to have sleepers on edge to mark the slope or level to which the

DIAGRAM N°3

SCALES { Vertical 1 Inch = 50 feet or 1/50
Horizontal " = 100 feet or 1/100

a a a Parapet Works in rear of Targets
b b b do. do. in front of do



gallery mound should be maintained (Diagram No. 4), otherwise a dangerous trough is soon cut through the top of the bank which may expose the ironwork of the gallery roof. At the commencement of each season every range should be carefully examined to see that all banks and mounds are repaired to their proper forms and levels.

Of target apparatus there are many patterns, and sometimes shooting men have strong prepossessions in favour of one or other. There is however no necessity for elaborate iron apparatus with multitudinous pulleys or levers, which are expensive both to fit up and to maintain, and limit the use of the galleries to one particular class of targets. A simple apparatus for pivotting the target and dummy or two targets can be put up by any village carpenter for 50s. or 60s. which will not obstruct or prevent the use of the gallery for moving or vanishing targets.

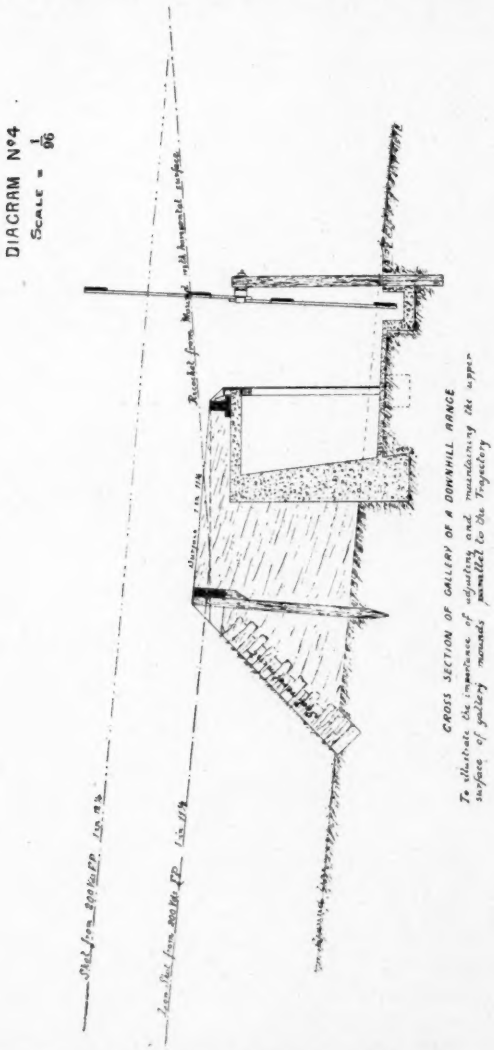
Purchase of Land.

Determining the conditions for the safe use of a site for ranges is however not infrequently the least of the many difficulties to be overcome in acquiring it. When these have been fully considered and the limits of the land required settled, the landowner may be recalcitrant, and if any public rights of way are affected the local authorities may raise formidable opposition.

It may be hoped that the present crisis bringing home to all the paramount necessity of the musketry training of our forces will do something to lessen these difficulties. The Military Lands Act, 1892, provides a means for the compulsory acquisition of suitable sites by provisional order, the cost of which, if the confirming bill be not opposed in Parliament, is not prohibitive. Although few landowners may care to incur the public odium of opposing a ranges scheme in Parliament which has been approved after a local inquiry, yet the risk is one which Volunteer corps at least under present conditions, can hardly be expected to incur. The difficulty might be easily done away with by the State undertaking to pay all the cost of the order and confirming act in the case of schemes passed as suitable by the district military authority. Sometimes it happens that the ownership of the land is limited. The life tenant although approving can neither sell nor give a sufficiently long lease. In such case the powers obtainable under the Military Lands Act are very useful.

Another danger which faces the promoters of range schemes, after they have taken the risks of opposition in Parliament, is the value which may be awarded for the land in the event of proceeding to arbitration. Unfortunately it seems possible that the owner may be legally awarded a sum far in excess of the real value of the land, plus the usual ten per cent. extra for compulsory purchase, on the ground that he is entitled to receive the value of the land as a site for ranges; that is following the celebrated judgment in the Manchester Water-Works case, where the owner was declared to be entitled not only to the full value of the land as a bit of moorland property, but to its value as a site for water-works.

Sites best suited for ranges are usually not upon ground which has any great value in itself, and though it is to be hoped that most land-owners would be sufficiently patriotic not to use it, yet the power to extort a price often many times the real value of the land should not



exist. A simple amendment to the Military Lands Act, directing that the arbitrator shall not take into consideration in awarding the value of the land its suitability for range purposes would suffice to remove the

uncertainty as to cost, which has stood and still stands in the way of many good schemes.

Fear that the existence of rifle ranges, in moorland districts especially, will disturb the game still exists very largely amongst landowners and their agents. It may be stated with the utmost confidence that this fear is altogether groundless.

The question of interference with public rights of way is always a ticklish one, and wherever a scheme involves, or is likely to involve, any stoppage, diversion, or danger to a public way, it is very advisable to go to the local authorities at the outset. They are rightfully jealous of the ways of which the Local Government Act has made them the custodians, but in the present state of public opinion there is no doubt that with a little tact satisfactory arrangements can generally be made.

Cost of Ranges.

It has been already said that the principal item of cost in range schemes is the purchase of the land. The price of land varies so greatly according to situation and other circumstances that it is not even possible to say what should be the average entire cost of range schemes of different capacities. But for the essential works, that is the galleries, firing positions, targets, equipment, and precautionary works, an average cost can be stated. For a scheme such as that shown in Fig. 2 the cost averages about £75 per target, say, £2,000. Then the land would probably have to be partly, if not completely, fenced. A residence for the caretaker is usually necessary, and shelter must be provided. The latter in the case of ranges at some distance from the headquarters of the troops will require to be of some capacity and reasonable comfort; a club house or canteen in fact. Supposing, then, we assume that the full amount of land in Fig. 2 be required, viz., three hundred acres, and that the land can be bought for £20 per acre, we have:—

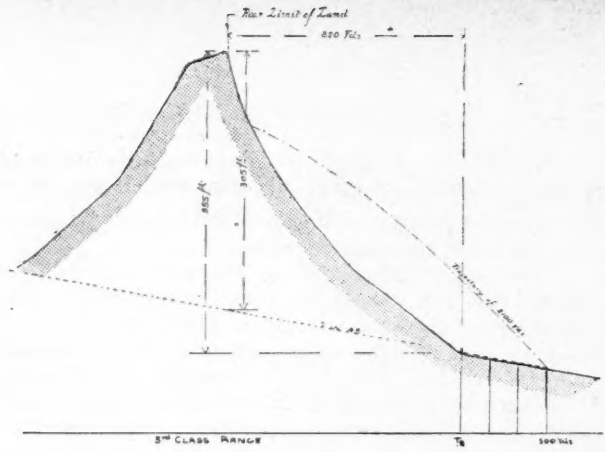
300 acres of land at £20 - - - -	£6,000
Fencing - - - - - - - -	650
1st, 2nd, and 3rd Class and volley ranges (26 targets in all) - - - -	2,000
Caretaker's house, canteen, etc. - - -	1,700
Magazine - - - - - - - -	100
	10,450
Contingencies - - - - - - -	1,050
	£11,500

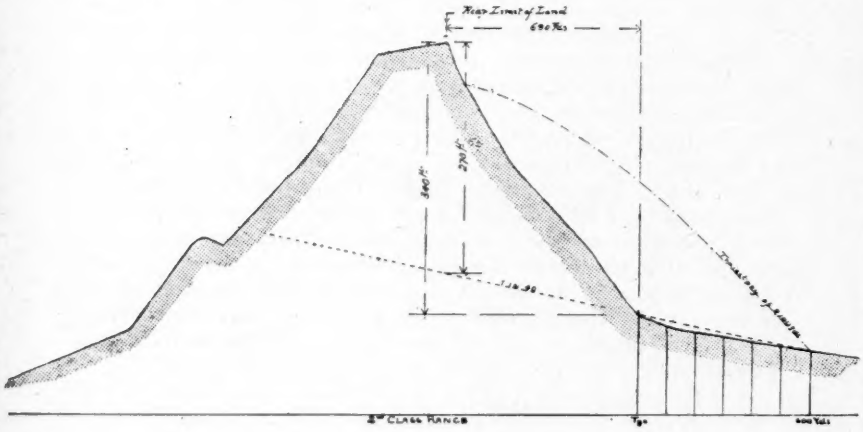
In the case of the Volunteers, whose time for practice is limited to one or two afternoons per week, a scheme of this character would provide accommodation for the musketry training practice and prize shooting of about twenty-four to twenty-six companies. Something depends on the distance by rail and road, and the facilities of getting to and fro. Under normal circumstances the capital cost of providing range accommodation may therefore be set down at from £440 to £480 per

DIAGRAM Nº 5

PROPOSED RIFLE RANGES AT WHITCHURCH, BRISTOL

— SCALES —
VERTL = 1/400
HORZ = 1/1200





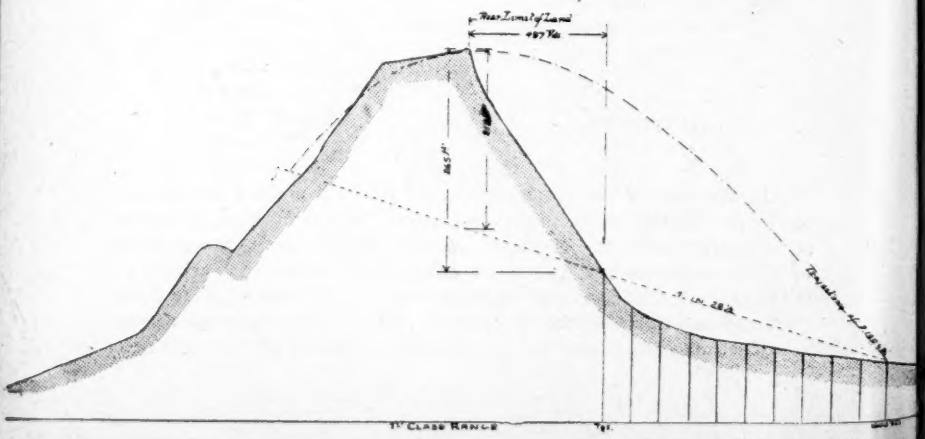
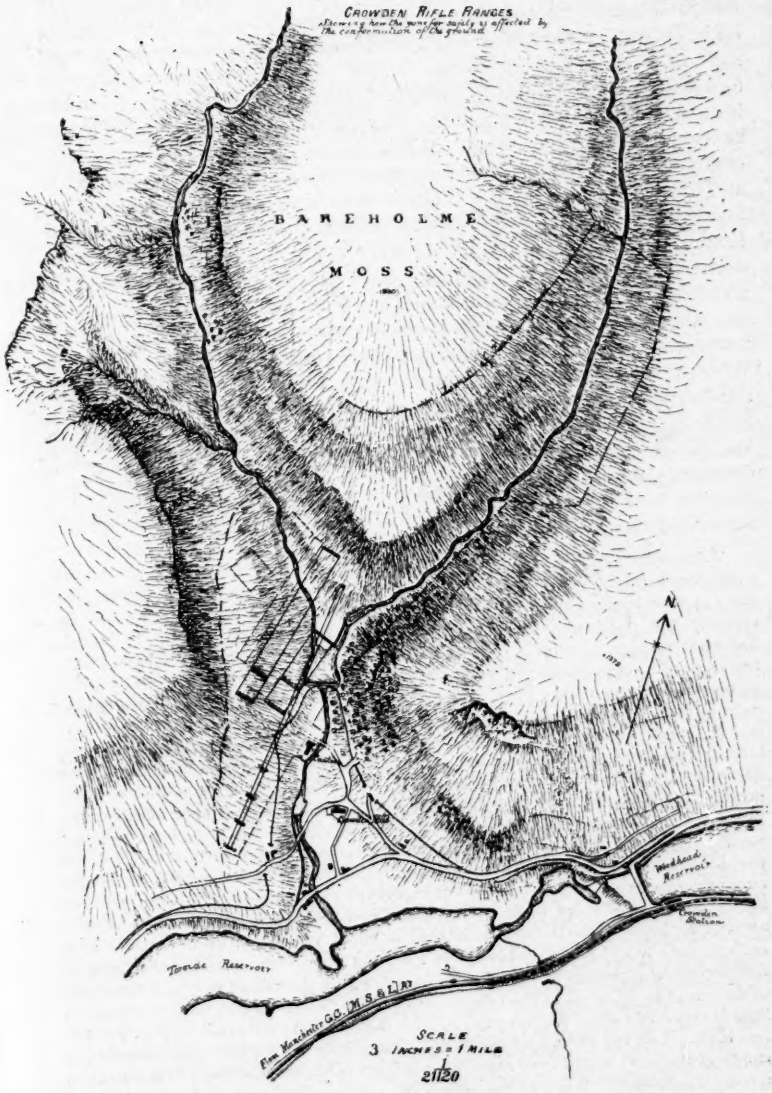


DIAGRAM Nº6


CROWDEN RIFLE RANGES
Shewing how the zone for safety is affected by the conformation of the ground
BARNEHOLME
MOSS
N
Woodhead Reservoir
Crowden Brook
Torside Reservoir
Rom Manchester G.O. M.S. & L. Ry
SCALE
3 INCHES = 1 MILE
1
21120

company of infantry Volunteers. With the Regulars and Militia the circumstances are very different. Probably four or five times the number of companies could be trained on a range of this character. This brings up an important feature in the range problem, one which is frequently lost sight of, namely, that the provision of adequate ranges for the Regulars and Militia will not provide for the Volunteers. It has several times been stated in Parliament that the Government had large range schemes in hand for the Regulars and Militia forces, and that when these were completed every facility would be given for Volunteers to use them. Now, as Volunteers, owing to the limitations of time available, require about four or five times the target accommodation as an equal number of the Regular forces, most of the W.D. ranges could not provide accommodation for more than one battalion. It is everywhere admitted that it is necessary to encourage marksmanship. With the competition of sports and pastimes it is hardly to be expected that the average Volunteer will devote his leisure hours to shooting unless reasonable facilities are given. When he has done his qualifying shooting for the year he will not take a railway journey to a distant range on the off chance that he may get a few rounds late in the afternoon if there are any targets to spare. Still less will he give up his Saturday half-holiday to waiting his turn in a cramped shooting gallery or cellar; but if the ranges be situated in the country, the distance ceases to be a matter of serious importance, if ample target and shelter accommodation be provided.

Lieut.-Colonel J. G. COCKBURN CURTIS, Reserve of Officers (late Oxfordshire Light Infantry):—May I be permitted to congratulate the lecturer on the extreme thoroughness with which he has investigated the principles that underlie the regulations regarding the construction of rifle ranges? I shall, however, venture to offer a few criticisms on the lecture in the hope that the lecturer will supplement the valuable information which he has already given us on one or two points. First as regards the lateral intervals required for safety on ranges. My experience supports the lecturer's rule that a lateral interval of one in five is sufficient. The rifle range at Poona had only the old 80 yards intervals and was a particularly dangerous range, because the ground between the firers and the butts was cut up by nullahs into a variety of ridges, so that a bullet striking the side of one of these ridges might easily be deflected upon a firing party in advance. Orders were therefore issued that no one was to be more than 400 yards in front of a firing party on an adjoining range (5 times 80 is 400). I know that for three years there was no accident. To judge of the safety of ranges accurate *data* are essential. We want reports of all accidents on ranges, with all the attendant conditions, to be collected and collated and we want more statistics about ricochets. The lecturer said that a bullet striking a certain place at a certain slope would probably behave in a certain way. What we want to know is definitely how ricochets will behave on impinging on ground of various angles and of various soils. Next as to the rule the lecturer laid down for calculating how much land is required behind the targets, he said that the hill illustrated in Fig. 2 is 350 feet high. I do not think any musketry staff officer or anyone else choosing a range of that sort would ever require the full limit of 2,000 yards behind the targets, nor do the Musketry Regulations appear to contemplate such a step, therefore I think that his comparison between the amount of ground which would be required under Government conditions and the amount of ground which was actually taken up is rather strained. The crux of the whole matter appears to me to lie in the words which he puts in the forefront of his rule, "given proper precautious against

ricochet." The rule shows where the bullet with the 2,000 yards sight on the angle of 5½° first strikes the ground in rear of the target. But besides the first impact of the bullet we have to fear the ricochet that will result. It does not necessarily follow that a bullet will lodge in the ground where it first strikes. How precautions against ricochets occurring near the targets can be taken has been shown by the lecturer by means of diagrams, but ricochets may occur up to the end of the safety limit even when fixed at 2,000 yards behind the targets. One precaution which is used largely in America, but not in England, is that almost all the earth required for the stop-butt in front of the targets is obtained by digging a trench sloping gently towards the targets and terminating at the side of the target at an abrupt slope. It is not possible in the case of the shooting of the Regular Army to take every possible precaution in front of the targets against ricochet that engineering knowledge can suggest, because in field practices ricochets count. I have observed that when a bullet after striking any surface diverges widely from the line in which it originally started it may fall with scarcely force enough to inflict a wound. On one occasion at 300 yards in rear of the butts at Deolali, just at the edge of the safety limit I picked up bullets which I know had ricochetted lying on a surface of soft clay wet with recent heavy rain.

Mr. H. SETON-KARR, M.P. :—I did not come here to-day with any intention of criticising the very interesting lecture to which we have listened. I came here more for the purpose of learning than criticising, and I listened with very great interest to Major Crook's lecture. I should like to suggest one or two very general considerations which arise on this interesting subject. I am thoroughly imbued with the importance of increasing the rifle range accommodation of this country. I think that we have not advanced our system proportionately to the advance in our rifle. We have a magnificent rifle, but I do not think our soldiers, Volunteers, and Militia have proper facilities for using that rifle. The lesson of the present war should help to educate public opinion on this point. That being so, it is most important that we should have increased rifle accommodation throughout the country, for it is only by constant practice that you can educate men with the rifle. There should be rifle ranges in every centre, every regimental depôt, every camping ground, so far as possible. That being so, the questions of how we are to get that accommodation, the cost, and so on, are of great importance. One must not be satisfied with too little. We ought to impress the public mind that we ought to have a large system of military ranges, and that it is going to cost a great deal of money. The lecturer referred to the law on the subject, the Lands Act, and to the cost of the range. There is only one thing in the lecture I would venture to call particular attention to, and that is with regard to compulsory powers for the purchase of land. It is naturally difficult to get increased rifle ranges for such a powerful rifle in a densely populated country like this. With regard to the powers that the Legislature give to acquire land, I am told there have been many cases in which recalcitrant landowners, or those who have not the necessary public spirit, have thrown serious obstacles in the way of acquiring land for ranges. Public opinion should be educated on that point so as to bring pressure on the House of Commons, if the present laws are not sufficient, to increase those compulsory powers in order that that necessary range accommodation may be acquired. As to cost, if you are to have an adequate system, you must be prepared to spend a good deal of money. I was interested in the particulars as to cost of ranges that the lecturer has given. No system would be adequate unless the prevailing difficulties of time and distance were overcome, so that a man can get practice without travelling a long way at great inconvenience : and there is no doubt that will cost a great deal of money. The importance of giving people facilities should be impressed upon the public mind. It is merely a case of cause and effect. If this present war had the effect of getting the man in the street to realise for the first time in his life the importance of making our soldiers good rifle shots, then in proportion to the sense of that importance in that man's

mind, so will he be prepared to cheerfully acquiesce in voting a large sum of public money for the purpose. I know the difficulties. I was saying a few words in the House of Commons the other night on this subject. I know a great many of my fellow members in the House of Commons, to my mind, are not sufficiently imbued with the importance of these facilities, the importance of better rifle training than we now possess, and they will in consequence be proportionately reluctant to vote the necessary public funds. I venture, humbly, to suggest to you, Sir, and to the lecturer and others, that every opportunity should be taken of impressing that importance upon the public mind. We all know what useful work the Navy League accomplished. Ten or twelve years ago it started, and in a sense it has forced the hand of successive Governments to spend public money on a more efficient Navy. In the same way it seems to me the lessons of this war may be utilised in order to educate the public opinion and get that public opinion to force the House of Commons and the Government of the day to spend more money on this rifle range accommodation. That is the only way in which I can see a general improvement can be brought about in our rifle range system. We all know that the public memory is very short. There is now a different complexion upon this war, which we are all glad to see, to what there was some few weeks ago ; but there is this danger, that if this war is brought to a rapidly victorious conclusion, the public will possibly forget about the dangers this Empire has passed through, and will overlook the importance of proper military training and so on. This question is a question of to-day, as was remarked by one of the London papers, and not of to-morrow. If we are going to have this increased rifle range accommodation, the sooner we have it the better. The cost will be very much larger as time goes on. The ranges may possibly be used for some other purpose some years hence, so that the sooner the public can make up its mind to do what is necessary, the cheaper and more effective it will be.

Major CROOK, in reply, said :—I am glad that Colonel Curtis, with his great experience, agrees generally with the principle of angular divergence. He agrees that that is the proper interpretation of the old official diagram. The diagram no longer exists in the red book, but the rule that there must be an interval of 200 yards between ranges is laid down, and so long as that rule stands in the Musketry Regulations so long will schemes which are perfectly safe be liable to rejection by the military authorities up and down the country, for the officers sent to inspect may consider that they are not at liberty to do as we desire. We put what we consider an intelligent interpretation upon it, but the rule without the diagram is liable to be misunderstood. I know from my own experience that that is the case. One example, I may mention, that of the Baildon Moor ranges in Yorkshire. If it had not been for this matter of the angle of divergence for safety being brought to the notice of the authorities at York, the scheme would have been confined to two ranges of small capacity with an interval of 180 yards between them, instead of which there have been constructed three ranges, which can be worked independently. I quite agree also with what Colonel Curtis has said that the details should be recorded of every accident which happens on ranges, and that we want more information about ricochet. There is a great deal in the report of the Small Arms Penetration Committee (1893-4) published in the JOURNAL of this Institution, a committee of which General (then Colonel) T. Fraser, R.E., was president.

Colonel CURTIS :—That was with a different rifle.

Major CROOK : - No ; with the Lee-Metford. Experiments on the ricochet and the angle of the rise after striking of the Lee-Metford bullet are given in that report. It is stated that the angle of rise after graze is much less than that of the Martini-Henry. So that the ricochet from the Lee-Metford is less dangerous than from the old rifle, though on account of the higher

velocity of the bullet it will travel a good deal further after graze than the Martini. Then Colonel Curtis thought it was hardly fair to contrast the distance required in the case of a splendid hill-side like that shown on Diagram No. 2, the longitudinal section of the Diggle ranges, and the amount of land required theoretically according to the old official diagram. I did not mean to say that in every case of that sort the district military authorities would require the full extent of land, although, as a matter of fact, in this particular instance they did. They would not pass that scheme without 1,500 yards in rear of the targets, in consequence of the report of a Board appointed to examine the scheme, which recommended the full 2,000 yards. The matter was referred to the War Office, and the War Office agreed to 400 yards, the distance which I had originally recommended. There is another point in regard to these zones. In any scheme, submitted to the authorities it is required that what may be called the official zone should be laid down on the plans in red lines. It used to be called the "danger zone," but I was reproved for so calling it, and was informed that it was to be called the "zone for safety." The zone for safety then has to be laid down upon the maps, showing a range scheme, and any landowner or other person interested in the land embraced in these red lines at once becomes excited about it. He thinks his land is imperilled. A great deal of misconception arises from the necessity of putting these zone lines down. It would be better if sites could be judged on their merits—that is, if the limits proposed by the designer as to how far the land in rear should extend were laid down, then if, on investigation, the military authorities did not consider the amount proposed sufficient, it could be extended. But to begin by putting down the maximum requirements for a level site, quite regardless of what the background may be, is not the proper way, for it creates quite unnecessary alarm, and if, subsequently, any less amount of land is sanctioned, it is difficult to remove the impression that the land which is left out and not purchased is not imperilled by the scheme. Diagram No. 2 was mainly intended to illustrate the enormous economic value of a hill background, and, consequently, that in seeking for range sites the hilly districts should be looked at first. In such districts the land is, generally speaking, less valuable, and you have a chance of finding a background which will enormously reduce the area of land required. Colonel Curtis also said that in considering the regulation laying down these 2,000 yards distance in rear it must be remembered that where the bullet struck it did not necessarily stay. That of course cannot be gainsaid; but the hill background, as I have tried to show, brings in the vertical equivalent for distance and cuts off a large quantity of the land in rear. The 2,000 yards on a level site does not provide for ricochet of a shot fired say with 5° elevation. If a bullet were to ricochet 1,900 yards in rear of the target it would not come down again until it had passed the rear boundary. In the other case, it strikes the hill background at an angle which renders the chance of ricochet more remote, or if the bullet does rise again it will be thrown up enormously. Clearly the amount of land in rear will be reduced in proportion to the slope of the hill. Ricochets too, as Colonel Curtis describes, frequently rise almost directly upwards. In nine cases out of ten ricochet shots come down within a few yards of the strike on hill-sides where the ground is pretty hard. But I quite agree that it is desirable this ricochet question should be more thoroughly investigated. The question is, Who is to do it? I do not see why it should not be done at Hythe in a thoroughly exhaustive and scientific manner. As to field practices, I have drawn attention to the fact that the extent of land required in rear will very much depend upon the nature of the practices which are to be carried out upon the range. In field and surprise target practices precautions against ricochet are impossible; you must take the land as it is. You may clear it of stones and other dangerous obstructions, but if the range is to be freely used for practices of that kind, then the amount of land required will generally be very considerable, unless it be open moor land in rear where an occasional stray shot might fall harmlessly, or if it can be commanded so that any-

one walking about upon it would be seen. Mr. Seton-Karr agrees with me in thinking that the schemes ought to be large and carried out at once. The whole question should be dealt with in a comprehensive manner, the amount of accommodation required in various parts of the country determined, the sites selected and laid down before the land is taken up for other purposes. I am certain that there are many sites in this country which can be readily adapted for ranges at a fairly moderate outlay. The principles governing the selection of sites, the conditions for safety required, and the kinds of practice permissible on certain classes of sites, should be clearly and authoritatively stated, otherwise we shall continue to see the military authorities of one district reject what those of another will pass without any difficulty. Something was asked about compulsory powers. The procedure was much the same as that for obtaining a Local Government Board provisional order. Application is made through the district military authorities to the Secretary of State for War, who appoints an officer to go down to hold an inquiry in the district, just like a Local Government Board inquiry. When a scheme has been passed by the district military authorities, and reported as suitable, convenient, and safe for the public, and the financial part of the scheme is approved, a provisional order is granted by the Secretary of State. Then that order has to be confirmed by an Act of Parliament. The Bill for that purpose may be opposed. It was petitioned against in the case of the Crowden scheme, and that is why I have urged that the Government should undertake to pay the expenses of obtaining a provisional order, and also guarantee the expenses of the confirming Act. This would relieve Volunteer corps especially of the danger that they may be saddled with heavy expense. If opposed in both Houses of Parliament, the costs might easily run up to £1,000 or £2,000. If the Government would do that, I think the powers under the Military Lands Act would be much more used. In the case I have mentioned the opposition was on the ground of injury to game, but rifle ranges do not disturb the game. Grouse will sit among the ricochet banks and seem to enjoy the shooting, apparently congratulating themselves that they are not on the other side of the valley where the firing is going on. It does not seem to interfere with their comfort in the least.

Colonel C. L. METHUEN (1st V.B. Gloucestershire Regiment) :—I lost my rifle range some two or three years ago through a railway passing through it. The railway was considered of more importance to the country than a rifle range for a regiment. I have since then been engaged in trying to obtain another. Major Crook kindly assisted me in surveying a range near Bristol, but owing to some difficulties with rents and security of tenure I have not been able to secure the range. The matter is now being taken up by the Government, and I think it will be carried through. From what I understand, the Government will not carry it out at all in the way it was surveyed by Major Crook, in which we were to have three firing points or sectional ranges, where we could fire at three different distances at the same time. If the Government take it now, I believe it will be made a one-section range of some twelve or sixteen targets, and for Volunteers this is of very little use. It may do for Militia and for troops who may be marched down or encamped on the range, but Volunteers can only come down on Saturday afternoons and shoot for a few hours. It is imperative that they should have a range in which they can shoot from three different points at the same time. I cannot understand why the plans of this range were not accepted. If Volunteers can shoot on a range, soldiers can shoot upon it ; but the converse does not hold that if the Regular soldiers can shoot on a range, the Volunteers can. It is imperative there should be a great many ranges provided for our troops, and the requirements of the Volunteers should be considered a great deal in the accommodation of those ranges.

The CHAIRMAN (Lieut.-Colonel Balfour) : — This extremely interesting and important question of ranges, not only for Volunteers, but for Militia and Regulars, has been dealt with by the lecturer to-day, to my mind, in the most

able and comprehensive way. The subject naturally seems to divide itself into two, and although those two overlap each other, yet I think they may be reasonably treated to some extent separately. The first part of the subject is technical. It consists of engineering and mechanical considerations, which the lecturer, from his professional capacity, is eminently able to deal with. The second part of the subject rather consists in the purchase of land, and the legislation required to enable the Volunteers and other branches of the Army to obtain that land for the purposes required. We have all of us, I think, pressed the Government for very many years to try to obtain land for ranges. I certainly have not been behindhand in making those efforts, and I regret to say that they have been fruitless hitherto, and that we have to write up in many cases the words "Too late." London has now extended miles and miles beyond its proper borders, and you will search in vain within a very large radius of this metropolis for any suitable place where anything like £20 per acre, mentioned by the lecturer, would be sufficient; it would be more like £100 or £200. Another point I should like to press, though with great diffidence, is the question of danger to the public. It sounds brutal, but I do not know why our soldiers abroad should run all the risks they do through not having been able to practise firing here, and the public not run any risk from stray bullets. I think that is one side of the question, that the public, after proper notice duly put up, ought to face the risk of being conceivably injured. Let them have due notice by all means. Why should the Volunteers or the Government be forced to purchase vast areas behind the targets, when proper notice to the public would make them walk behind those targets at their own risk? These are questions of great interest and high technical importance. I do not myself think that we shall ever be able to experiment on the ricochet question with any approach to scientific accuracy. There are three forces involved: the velocity of the bullet at the moment of impact, its velocity of rotation, and the nature of the surface which it strikes. In no conceivable conditions can these three actual elements ever be identical. Any experimenter can erect a steel plane at a certain distance from the muzzle of a rifle, and fire that rifle and tell exactly what that bullet is going to do after striking that steel plane at a certain angle. Practically speaking, the same thing would happen every time. But when you are dealing with different surfaces no amount of experiments will give you more than the vaguest idea of what a ricochet bullet is going to do. I, alas! had a great deal to do with a certain unfortunate lawsuit which occurred owing to the death of a man by a bullet wound in the neighbourhood of Wimbledon. By advice of the War Department we fought our action, and we partially lost and partially won it. Before a judge, who himself is a Senior Wrangler and a noted physicist, we had expert evidence of the most conflicting character, and that to my mind will be to all time the nature of expert evidence on that particular subject. As far as game is concerned, I am absolutely in accord with the lecturer. I myself am a very keen sportsman, and on land over which I have a certain amount of control and constantly shoot, I not only have urged the construction of ranges, but have urged the carrying out of manœuvres, which are much worse than ranges, without the slightest fear of injury to the grouse or partridges—they are both on that particular land. With regard to the question of collective practices, all our military authorities attach enormous importance to them, and if we Volunteers are to endeavour, as I hope we shall, to carry those out, it will be necessary for us to have ranges far in excess in point of safety of what are required for individual practice. In the battalion which I have the honour to command we have succeeded in putting last year 97 per cent. of our men through collective practices, but it is done at enormous expense, and, as far as I know, it can only be done on three ranges within sixty miles of London, Pirbright, Bisley, and Staines, and only very partially at Staines. We now come

to what is almost the most important point to be considered to-night, and that is, the provisional ranges. To-morrow in this hall there will be a meeting called by the Institute of Commanding Officers to consider certain proposals put forward by the London County Council. The Middlesex County Council has also taken the lead in certain directions under Mr. Littler, Q.C., and I think an Association of County Councils has been formed to further the objects which they have at heart. Whether the best way of dealing with this subject is by local bodies or by the Government, perhaps this is not quite the fittest place to discuss. I have the strongest view that it is the Government's business. But it is not for us to look gift-horses in the mouth. We must do our best with what little we can get; and therefore, as far as I myself am concerned, I have strongly urged and pressed forward the Local Government authorities in this matter. It is little we shall get, I am afraid, but I feel sure of this—that if members of the House of Commons who, like Mr. Seton-Karr, take a very great interest in these things will move in the matter, we shall be able to form, sooner or later, in some way or another, an organisation which will have such authority that, whatever Government is in power, irrespective of party—party is not the point—we shall be able, in course of time, to force the Government to do what we regard as its duty.

AN ITALIAN VIEW OF THE BOER WAR.

(CONCLUDED.)

By General Count LUCHINO DAL VERME.

Published in the "Nuova Antologia," July, 1900.

Translated by Colonel C. NEEDHAM, Military Attaché to the Embassy at Rome.

(*Continued from August* JOURNAL, *p. 921.*)

PART IV.

The English headquarters were moved on 5th May to Brandfort, a little town on the railway, 37 miles north of Bloemfontein, where the Commander-in-Chief had remained five days.

This halt had appeared terribly long to the English public, who were impatient of delay; but Lord Roberts had not only been compelled to collect provisions, re-organise the transport, find fresh horses for the cavalry, and equip the men; he had also been obliged, before advancing further, to drive the enemy out of the district between the Orange River, the railway, and Basutoland, which, though conquered and occupied by the English, had again been invaded by parties of Boer raiders.

These were the bands that commenced their raids with the attacks at Koornspruit and Reddersburg, captured guns and convoys, and made prisoners nearly a thousand English regular troops, and now promoted rebellion, and raised hopes that had apparently been dashed for ever in the minds of the Boers. In order to deal with these freebooters, whose successes appeared for a time to signalise the return of good fortune to the arms of the Confederate Republics, and caused distress throughout the Empire, the Field-Marshal, whose first care was to relieve the Wepener garrison, set in motion all the troops under his immediate command, extending them across the south-eastern district, so as to execute a great converging movement to the north, the pivot being the Waterworks at Bloemfontein, while the outer flank moved along the Basutoland frontier. Towards the end of April, General Hamilton's mounted infantry, on the extreme left, advanced on a front of nearly 50 miles towards the Waterworks, the scene of the disaster on 31st March. French's cavalry moved towards Thaba 'Nchu; General Rundle's 8th Infantry Division marched further to the south on Reddersburg, where the reverse had been met with on 4th April. Still further to the south-east was Pole-Carew's 11th Division. Lastly, on the extreme right, Brabant, with the main body of the Colonial Division, came from Aliwal North to assist

Colonel Dalgety, who was besieged at Wepener. A few troops remained at Bloemfontein, and General Tucker's Division was still at Karee Siding, the railway station occupied after the engagement on 30th March.

The simultaneous movement of such large forces was bound to succeed, and did succeed, in driving the enemy out of the invaded territory, and in compelling him to raise the siege of Wepener. There were a few engagements here, but none of importance. The Waterworks were re-occupied on 21st April, after being in possession of the Boers for four weeks, though they were not more than 30 miles from headquarters at Bloemfontein. The same day Dewetsdorp was taken without fighting. There was considerable resistance at Thaba 'Nchu. Mounted infantry, cavalry, and artillery had to fight detached actions in the mountainous country round the village for three days, from the 27th to the 30th. On the 30th there was more fighting to the north, at Houtnek. While the English were occupying the Waterworks and Dewetsdorp, the Boers had abandoned the approaches to Wepener, had re-crossed the Caledon, and taken the road to Ladybrand, whither the small bands, driven out by the general advance of the English, also directed their course. Nevertheless, the stand made by the Boers at Thaba 'Nchu, though neither determined nor concentrated, and consisting merely of a kind of guerilla warfare, had the result always achieved by the men of the Orange State and the Transvaal during eight months' fighting, except on one occasion at Cronje's laager, viz., they were always able to retreat in time, and consequently in good order, without being even partially defeated, without leaving either guns or baggage in the hands of their enemy, and with the loss of very few men. Thus the few hundred raiders who had invaded the south-eastern district of the Orange State succeeded in delaying the overwhelming forces of their adversary until the 5,000 or 6,000 Boers who besieged Wepener had retired by the Jammersberg ford on Ladybrand, and then managed to escape in safety, much to the astonishment of the Basutos, who from their frontier looked on at the Boer commandoes once more eluding their foe, with wagons drawn by ox-teams, though they were hard pressed and threatened on every side by the English horse and foot. It is said the raiders were only 2,000 in number, and had no baggage, but carried a week's rations on their horses. They were chosen from among the best mounted men, and when the provisions were consumed and the horses tired out, were replaced by others equally well selected and provisioned. This special detachment was called a "parade commando."

At length the country was clear of the enemy. During the seven weeks' halt at Bloemfontein, the military authorities had time to collect provisions for the forward march, and the moment had arrived for commencing it. On 3rd May, the advance guard moved off, and at mid-day on the 5th, the 11th Division entered Brandfort without opposition.

The forward movement once commenced, the army did not halt until reaching Kroonstadt, and it may be said the further advance was made at a uniformly accelerated pace. Lord Roberts had, for various

reasons, been obliged to halt so long at Bloemfontein, that, once he was in a condition to advance, he made the troops march at a rate never attained by any of the other generals during the campaign, and of which he alone had given an example in the march which led to the capture of Cronje and all his men. In this way, the experienced leader never gave the enemy time to prepare a defensive position, and he hoped to make the Boers fight in the open, or compel them to abandon the country without offering resistance. This latter object he succeeded in attaining.

The country to be traversed, while marching north-east along the railway line, is intersected by several water-courses, which, collecting the waters in the east, lead them to the great river Vaal in the west. These might serve as so many lines of defence, though except on the right, where the country is more or less mountainous, there are no positions suitable for an obstinate resistance.

Adapting the order of march to the nature of the ground, the Field-Marshal had given orders that the principal column, formed of two infantry divisions and most of the artillery, should move in the centre across the plains traversed by the railway, while the main body of mounted infantry, under Ian Hamilton, marched across the hilly country on the right, with Winburg as its objective; General French's cavalry reconnoitred to the front and left flank on the open plains which extend north-west towards the Vaal.

The day following the occupation of Brandfort, the central column crossed the Vet without opposition and occupied Smaldeel, the junction on the Winburg railway line. The same day, Hamilton arrived there with the mounted infantry from Houtnek, thus establishing direct lateral communication with the main body, which is always desirable on the parallel march of several columns in an enemy's country.

On the 9th, Lord Roberts, continuing his advance, occupied Welgelegen, and on the 10th, a general engagement took place on the line of the Zand, which it was said the Boers intended defending to the last extremity; in fact, it seemed as if they meant to hold the position, posted as they were, according to their custom, on a front nearly 20 miles in length, with artillery at the most advantageous points; but the resistance was anything but determined.

The three columns crossed the Zand by three different fords, encountering the enemy at every point, which proved—what would have seemed impossible—the exaggerated prolongation of their line, with the natural result that it was weak in every part.

The same day, General French's cavalry arrived by a long flank march at Ventersburg Road Station, while Hamilton's Division on the right nearly reached Ventersburg town. Here the resistance was greater than on the left; hardly any was encountered by the centre column.

The losses of the English were very slight, 25 to 30 killed or wounded, but those of the Boers cannot have been much heavier. The latter fought for the first time in a faint-hearted way. The military correspondent of the *Westminster Gazette* estimates the British forces at the battle of the Zand at 35,000, and those of the Boers at 10,000.

The day after this success, easily obtained over an enemy who found the ground unsuitable for his system of defence, Lord Roberts left the Boers no peace, and gave his troops no rest. Pole-Carew's Division arrived on the 11th at Geneva Siding, 12 miles from Ventersburg Station. The evening of that day French's cavalry forded the Wasch, a day's march in front of the main body. At mid-day on the 12th, 48 hours after crossing the Zand, the Field-Marshal entered Kroonstadt at the head of his Colonial guards, followed by the Yeomanry and the 7th Infantry Division.

Kroonstadt is 120 miles from Bloemfontein. This was the first stage of the great march on Pretoria, after the long halt in the Orange capital. But the march made by two infantry divisions, by the cavalry, and mounted infantry had left behind General Rundle's 8th Division and Brabant's Colonial troops in the eastern part of the Orange State, where they were detained by the insecure state of the country, inhabited by a hostile population, who had not forgotten the raids. Even on 10th May General Rundle had information of detachments of the enemy hanging about to the north-east and even south-west of Thaba 'Nchu. On the 11th, having to conform to the movements of the Commander-in-Chief, Rundle and Brabant were satisfied to advance, the former towards Clocolan, the latter on Ladybrand.

The movement of the army on Kroonstadt must have decided that in Natal, for on 11th May General Buller started his troops in the direction of the Biggarsberg, the spur of the Drakensberg mountains which blocks the valley of the Waschbank, and then extends south-east between the Buffalo[1] and Sundays River.

It seems inexplicable that the Commander-in-Chief should have left an army corps idle so long in a place where a division would have been more than sufficient to prevent a Boer attack from the north, did not a telegram from General Buller of 15th May explain the Field-Marshal's intentions in retaining so large a force at Eland's Laagte: "Keep the enemy on the Biggarsberg occupied." These had been Lord Roberts' orders, and it was evident he did not intend the 4,000 or 5,000 Boers on the Biggarsberg should be able to send reinforcements to those he would have to encounter in the Orange State. Now, as far as one can judge from a distance, the best and most rational method of carrying out the Commander-in-Chief's orders would have been to advance instead of halting, and to do in March or April what was only accomplished in the middle of May, thus gaining the by no means inconsiderable advantage of allowing the return of the English to Glencoe, Dundee, Newcastle, the coal mines, and, in short, to the whole of Upper Natal.

Operations were developed from the east on the foot-hills of the spur at Pomeroy and Helpmakaar, where the 2nd and 5th Infantry Divisions and Lord Dundonald's Cavalry Brigade attacked on 13th May,

[1] The Waschbank is a stream that falls into Sundays River, a northern tributary of the famous Tugela. The Buffalo is the largest tributary of the Tugela. Its upper waters form the boundary between Natal and the Utrecht district of the south-eastern Transvaal.

two days after the march began. The Boers, who, it was afterwards ascertained, were not more than 2,000 strong, retired immediately, setting fire to the grass, so as to delay the assailants, who were unable to pursue them, and were compelled to halt half way between Helpmakaar and Dundee. On the 14th the enemy abandoned the town, and Sir R. Buller entered it. From Dundee the English advanced unopposed to Glencoe, and thence to Newcastle, which they occupied on the 17th. At last the country was no longer held by the enemy who had occupied it for seven months, that is to say, since the commencement of hostilities in October. The military correspondent of the *Morning Post*, Spencer Wilkinson, reminds us that at the beginning of the campaign General Symons fell at Dundee, while fighting a large division of the Boer army, which was then intact, with barely four battalions. His remarks are much to the point when he says :—" Nowadays, it is a matter for congratulation when 5,000 Boers retreat before five times the number of British troops." He adds :—" It would appear as though the war had taught the public they must expect less of the generals and their troops than they are able to perform. Mountains have now become insuperable barriers, which was certainly not the idea of great masters of the art of war. Hannibal and Napoleon always gloried in leading their armies over obstacles of that kind, even when it was considered impossible."

Definite news as to the fate of the defenders of Mafeking was bound to arrive in May from the western theatre of war. Anxiety increased every day in the English metropolis; when, on the 15th and 16th, meagre and contradictory telegrams reached London, first recording the assault and burning of the native quarter by the besiegers, and then the capture of Colonel Baden-Powell and his 900 men, even the phlegmatic English were in the depths of despair. This will explain why, when it was known that the news was untrue, that the gallant commander had defeated the Boers, and that the relief column from the south had joined Plumer's from the north, and that together they had relieved the town, consternation was replaced by enthusiasm and exultation; not only enthusiasm, but a perfect delirium took possession of London, of England, of the United Kingdom, of the Colonies, and of the whole Empire. The demonstrations and rejoicings over the capture of Cronje and the relief of Ladysmith were completely eclipsed. Never had the English been driven to such a pitch of excitement, described by a London paper as "mad delight," and which may be literally translated in Italian as *la pazza gioia*.

After the prolonged skirmishing at the Vaal Bridge, between Warrenton and Fourteen Streams, during half of March and the whole of April, without Lord Methuen's troops ever being able to establish themselves on the opposite bank, General Hunter, who had been given command of the new 10th Division to act in the extreme west, had at length taken the enemy's position by a wide flanking march, after crossing the river at Winsorton. Winsorton is a village on the right bank of the Vaal, about 25 miles down stream, and south of the long-contested bridge at Warrenton.

This was the commencement of the operations which terminated so successfully. Having formed a flying column of mounted men, mostly from the Imperial Yeomanry, with detachments of Colonial troops and a horse battery from the Regular Army, General Hunter had given the command to Colonel Mahon, of the Hussars, who left Barkly West on his adventurous expedition on 4th May, with 20 wagons loaded with provisions, ammunition, and baggage. Barkly West is a considerable town on the Vaal, still further down stream and not less than 20 miles from Winsorton, and the same distance from Kimberley. The spot chosen for the formation of a flying column must be selected on the spur of the moment, so that no information may reach the enemy; it did not reach the enemy, or the public either in Africa or Europe, until the day of the final success, when no one, even at the War Office in London, knew who commanded the column.

Eleven days after the force had left Barkly West, and eight days after the taking of Fourteen Streams, that is to say, on 15th May, General Hunter set out with his division, along the right bank of the Vaal, for Christiania, whether to co-operate with Colonel Mahon in the enemy's country, or merely with the idea of diverting the attention of the Boers, is not yet known. At the same time, Lord Methuen, of whose movements there had been no intelligence since he had defeated the French Colonel Villebois, began his march on Hoopstadt, the chief town of a district in the Orange State on the right bank of the Vet, and near the frontier.

The flying column, having left Barkly West on the 4th, occupied Taungs, a railway station 140 miles from Mafeking, on the 7th. A long distance had still to be covered, and this was rendered still longer by the necessity of making a wide detour to avoid the enemy. Once more on the railway line, the column reached Vryburg on the 10th. Three days later, near Kraipan, 35 miles from Mafeking, it was attacked in a wood, but Mahon's troopers repulsed the enemy, though they lost 30 men, and continued on their way. On the same day, the 13th, a handful of Boers —some say not over 200—broke into the town, but were routed and lost 130 of their number, killed, wounded, or prisoners. On the 15th Mahon's column effected a junction with Plumer's. This gallant officer had for months been striving in vain to bring relief to the besieged town with his few Rhodesian troopers. After his defeat at Rahatlabama on 31st March, he had been unable to do anything: it was only now, after six weeks' interval, that he saw the work accomplished in which he had taken so great a part, but credit for which was not given him by the public and the press, in the excitement of the moment.

On the 17th, two days after the colonels had joined forces, the Boers raised the siege, and on the 18th, the relief force entered Mafeking. Baden-Powell had defended the place for seven months, giving an admirable example of fortitude, coolness, and discipline, and justifying to the best of his ability the confidence placed in him by the Field-Marshal, who had begged him to hold out till 18th May; it was on that very day the relief column entered the town.

Baden-Powell, who was at once promoted Major-General for service in the field, was not in the least vain-glorious over the demonstrations in his honour; the gallant officer, who is also a poet and an artist, replying to one of the numerous letters of congratulation sent him, said it was easy enough to act as the figure-head of a ship; but if the ship behaved well in a heavy storm, the credit was due to the timbers, the sails, and the rigging; he, the commander, was the figure-head at the prow, the garrison represented the timbers, sails, and rigging, and all the praise was due to them.

The relief had actually been effected by Mahon's flying column acting in concert with the small Rhodesian force under Plumer, and with the garrison, who, on the 13th, defeated the 200 adventurous Boers who had entered the town, and made most of them prisoners. It appears the movements of General Hunter and Lord Methuen had no influence, even indirectly, on the result, for the former arrived at Christiania, on the Vaal, the day before, and the latter at Hoopstadt, in the Orange State, on the very day the town was relieved. The two generals were each about 137 miles in a straight line from Mafeking. Preparations for the expedition had taken a long time, far longer than was expected in Europe after the relief of Kimberley, on 15th February, that is to say, they had lasted ten weeks. History will tell the cause of this delay, when such large forces were available, and it was only a question of driving off 3,000 Boers, for there were no more at the very outside, to keep up the siege of the town, and defend the bridge at Fourteen Streams so obstinately, during the whole of April. History will also tell us, which might have been foreseen, that General Carrington's expedition to Rhodesia was never intended for the relief of Mafeking, for it was still far behindhand at the beginning of June. It may be said, it is true, that a detachment of Australians, among the first to land at Beira in April, arrived in time to reinforce Colonel Plumer's slender force. It may also be said that, once it was decided to undertake the expedition from the South, it was prepared on lines that displayed the experience of the Commander-in-Chief; it was carried out silently and rapidly, thanks to the ability of the leader, the mobility of the force, composed entirely of mounted men, and that no orders were given except to those who had to execute them, and who obeyed them implicitly.

This important business being settled, renewed attention was paid to the Orange State, where the last blow remained to be struck which would lead to the close of the campaign. It was repeatedly stated that the line of the Vaal River would be obstinately defended by the enemy, and there was some foundation for the statement in the fact that the river marks the boundary of the Transvaal, and that the Transvaal men were now, for the first time, disputing the invasion of their country. But much had also been made of the preparations for defence on the line of the Zand River, which was, in fact, very feebly contested. On the other hand, Lord Roberts had found the way to make his infantry march, and the energetic Chief of the Staff had made arrangements in good time to secure provisions for the advance. The rapid march from Bloemfontein

to Kroonstadt was encouraging, in view of the distance from Kroonstadt to Pretoria. The only disturbing element was anxiety for the line of communications, not yet entirely safe from the *coups de main* by the Orange commandoes which Generals Rundle and Brabant had only just succeeded in driving further north, after much hard marching. Lord Roberts, however, considered the 8th and the Colonial Divisions strong enough to make head against the enemy remaining in the Orange State, and to guard the line of railway patrolled by Kelly-Kenny's troops, and advanced with the same force with which he had reached Kroonstadt. It would not have been prudent, and, perhaps, hardly possible, to increase the number, for this would have added greatly to the difficulties of commissariat and transport. The arrangements made by the Commissariat Corps were intended to provide rations for the troops Lord Roberts was taking to Pretoria, viz., two infantry divisions, one cavalry division, and one of mounted infantry, for the number of days it would take to reach that city, on a liberal calculation. It was evident that, to carry out the march properly, a given number of men and horses must be taken and no more. It was most important to reach the goal as rapidly as possible, so that the enemy might not have time to prepare a defensive position. Sir Frederick Roberts had gained the peerage of Kandahar by a march that will be for ever famous in the annals of Afghan warfare. He did not mean to lose his reputation, so the army began the advance as soon as the damaged railway was repaired and the transport service organised, which took ten days. On 23rd May, the principal column moved towards the Rhenoster River, preceded on the right flank by Ian Hamilton's mounted infantry, who had occupied Heilbron on the 22nd without opposition. On the 24th, French's scouts crossed the Vaal, unhindered, to the north-west, near Parys, and three days later, the two infantry divisions under the Field-Marshal crossed the river at Viljoen's Ford, without meeting the enemy, and encamped that evening at Vereeniging. At length, after seven months and a half of warfare, the British Army was in the Transvaal.

The march continued along the railway; on the 29th, Lord Roberts occupied Elandsfontein, the junction of the lines which unite Klerksdorp and Johannesburg with Natal, Pietersburg, Lorenzo Marques, and Pretoria with Bloemfontein, and is, for this reason, a point of the greatest strategic importance. Soon after, he reached Germiston—almost a suburb of Johannesburg—without fighting. On the other hand, General Hamilton, while supporting the cavalry to the west of the town, found the road blocked on the 29th by the enemy posted on heights 2½ miles south of the Rand mining camp. One heavy gun, three field-pieces, and some mitrailleuses were in position. The Commander-in-Chief's telegram reports that the attack was made chiefly by the Gordon Highlanders, and that the enemy fought obstinately till evening, when he was compelled to retire. On the 30th, a parley was held with the representative of the Republican Government. The President had left in the morning for Waterval Boven, a railway station within reach of Lydenburg, and on the 31st the Field-Marshal entered the Confederate capital, the Golden City

of Johannesburg, in triumph. He had marched the 195 miles from Brandfort in 26 days, of which ten had been passed at Kroonstadt, so that, on an average, his troops made 12 miles a day in their sixteen days' march. This is rather under the average of a day's march in Europe, but seeing that the longest stages were at the end, and that a whole army corps was on the move, it may be considered as a historical march. The approbation of the press and the public was well deserved, but more by the leader who knew how to organise a system for providing rations during the long-continued march, than by the troops who executed it; they only showed they could march well enough when led by those who insisted on the infantry doing their best, and there were some doubts as to what that might be, for their powers had never been displayed during the unfortunate period at the beginning of the campaign.

No doubt two different elements concurred in producing the brilliant result, one being the conduct of the enemy, the other the management of the railways. The enemy, it is needless to repeat, never opposed the advance to the gates of Johannesburg, except by a show of resistance on the Zand; it was owing to the military director of railways that the damage done to the line was so quickly repaired. Lieut.-Colonel Girouard, a Canadian by birth, was still a lieutenant in 1894, when he was Superintendent of the railway at Woolwich Arsenal. He was sent to the Sudan when the desert railway was commenced; it was he who directed the rapid construction of the line and its prolongation along the Nile, without which it would have been impossible to transport an army to Khartoum. His speciality was to work rapidly with any materials at hand, without sparing the labourers, or thinking how long the work might last. When Lord Kitchener was selected for the important post of Chief of the Staff to the Army in South Africa, he insisted on Girouard being employed, for he knew his services would be invaluable. He was right, for the repair of damaged lines and the construction of temporary roadways over broken bridges could not have been effected more rapidly, and thus the continuation of the advance—an important object—was rendered possible.

While the Field-Marshal was marching the main body into the heart of the enemy's country, his subordinates had great difficulty in advancing through the districts in which they were employed.

Sir Leslie Rundle, with a part of Brabant's Colonial Division, had been for some time in the eastern part of the Orange State, but had not succeeded in driving out the burghers, who were well armed and formed in detachments which must have been fairly strong, and were certainly bold and active, if they could remain in what was the "Free State," now known as the Orange River Colony, and could contend with a whole division of Regular troops and with the mounted Colonials whom they had first met at Wepener, and described as the most troublesome opponent they had to do with in the whole campaign.

General Rundle had only been able to drive the enemy out of Senekal, 50 miles S.S.E. of Kroonstadt, on 24th May, when French's scouts were crossing the Vaal; he had to fight again on the 28th, as the Yeomanry

had fought two days previously, still near Senekal, against the Boers, who would not leave the neighbourhood; they were like a covey of partridges driven backwards and forwards from their native valley, and which, though almost decimated, still persist in returning to their old haunts. In these encounters the English lost heavily in killed and wounded, besides two colonial officers commanding patrols, who were cut off and captured.

There had been another disaster in Natal. On the 20th a company of Colonel Bethune's mounted infantry—some of the first troops to enter the southern Transvaal—fell into an ambush near Vryheid, and 66 men were killed, wounded, or taken prisoners.

General Buller, after occupying Newcastle on the 17th, had moved northwards, not rapidly, but, at any rate, he had advanced, avoiding Laing's Nek, and endeavouring to turn the enemy's position from the east, as he had done in the Biggarsberg; for this purpose he ordered General Hildyard to occupy Utrecht on the 27th. This was effected without opposition, while the fighting on the mountain passes was confined to an artillery duel at long ranges.

In the west nothing of importance had happened since the relief of Mafeking, save General Hunter's march, which was made with the double object of re-establishing communications, and of forming a column, which, by moving eastward from Mafeking, might co-operate in a decisive action against the enemy, who had retired on the capital.

Thus, the day on which Lord Roberts had entered Johannesburg, Generals Rundle and Brabant were still near Senekal, in touch with the Orange levies. General Buller, having taken Utrecht, was in front of Laing's Nek; Hunter had arrived at Mafeking, and Methuen was still near Hoopstadt in the Orange State. So that, to describe briefly the situation on 31st May, it may be said the Field-Marshal had left his generals far behind, excepting Hunter, who, finding no enemy to oppose him, had little difficulty in reaching Mafeking at the same time the Commander-in-Chief entered Johannesburg with the main body of the army. The Field-Marshal had not yet accomplished his object. His rapid advance having disorganised the enemy and given the latter no time to prepare for defence, the favourable opportunity was not let slip; there was no delay, and the advance was resumed. The men were now in good training. they had learnt to do without the luxuries which were formerly considered indispensable. The commissariat was working well on the railway, which there was every reason to believe secure, as it was guarded by numerous forces specially detailed to watch the line of communication. Three days after the entry into Johannesburg the army set out for the north; the general advance from Orange Grove commenced at daybreak on 4th June. It was led by the mounted infantry and Yeomanry, who dislodged the enemy from the banks of Six Miles Spruit—so called because of its distance from the capital, and which runs from east to west and falls into Crocodile River. The naval guns, supported by two infantry brigades, took up a position, and a few rounds soon drove the enemy from their next line of defence. General Ian Hamilton advanced on the left

with the main body of mounted infantry. It was nearly dark when the troops had surrounded the town, which was threatened from all sides, General French's cavalry having got round to the north. The blockade being complete, Lord Roberts decided to await the morrow. During the night Louis Botha sent word that he would not defend the town, and, at 2 p.m. on 5th June, Lord Roberts entered Pretoria, which from that moment ceased to be the capital of the South African Republic. The Boers, who had so valiantly defended the country between the Tugela and Ladysmith against forces of double their number, abandoned the forts that German engineers had built at great expense round the capital. The Boers, who, in seven months of warfare had taken 4,000 prisoners—among whom 160 officers—from their formidable enemy, released them all before the English entered the town.[1]

They only managed to carry off about 900 in a train which proceeded at full speed towards Middelburg, and it is said that among them were the Colonials, whom the Boers looked on almost as rebels, and whom consequently they did not treat with the usual courtesy they extended to prisoners of the Regular troops, whatever may be said to the contrary, not by the prisoners themselves, but by the Press in England and at the Cape. It is true they succeeded in saving an immense quantity of baggage and ammunition and all the guns, on which, it appears, the burghers set far greater store than on the prisoners, whom they regarded as an encumbrance. They did not reflect that the latter—especially the 160 officers—were of far greater value than all the guns they hastily carried of, and which, after all, would probably be of no use to them. It was reported that a second train carrying another thousand prisoners was ready, but they had no time to start it. Great confusion must have reigned in Pretoria from the moment Lord Roberts and his troops came in sight of the town. The Government had dissolved, the leaders of the burghers did as they pleased, and the burghers themselves were tired of fighting without any hope of ultimate success, so that nothing was done systematically. It is said that it was impossible to defend Pretoria, for there had not been time to mount the heavy guns recently arrived from Mafeking and Natal in the forts. Perhaps there were not enough of them, and very probably they were short of ammunition after the long sieges, during which so much had been expended. In short, there was a lack of everything, as might be expected in a State

[1] In the report published by the War Office on losses up to 9th June, before the prisoners released were accounted for, 200 officers and 4,458 rank and file were stated to be missing or prisoners. In the next report on 16th June, when the number of released prisoners (148 officers and 3,039 men) was deducted, 41 officers and 1,469 men were returned as missing or prisoners; but this does not include the prisoners of the 13th Battalion Imperial Yeomanry on 31st May, nor the 4th Militia Battalion on 7th June, of whom the number had not yet been returned; but as there can be very few of whom some news has not been received, it may be said that up to the present time the Boers have taken about 5,000 English prisoners, of whom about 200 were officers.

which, however brave the inhabitants, had not, and never could have, any kind of military organisation, by which alone an efficacious defence could be prepared.

The Field-Marshal had completed the third and last stage of his advance from Bloemfontein, commenced on 3rd May, and had reached the capital in a little over a month. His generals left in the Orange State remained there; Rundle and Brabant more or less in the same district near Senekal, whither Lord Methuen had been sent to see if, by a combination of forces, they could not finish off the commandoes which were still scouring the country. But they were a long way from putting an end to De Wet's raids, which, indeed, seemed to be only commencing. When the army began to march northwards, and Hamilton's mounted infantry left Heilbron, the Highland Brigade were sent to occupy the town, where they arrived on 29th May, after having been harassed all the way from Ventersburg. At the same time the 13th Battalion of Imperial Yeomanry was attacked on the march from Kroonstadt to Lindley, on the 27th, and suffered some loss. Four days later, at the very moment the Field-Marshal was entering Johannesburg, the Boers fell upon this battalion near Lindley, and the English, overcome by superior numbers, left 140 killed or wounded on the field. All the others were made prisoners. The battalion, under the command of Colonel Spragge, numbered about 580 men, all mounted on horses which were their private property. One of the companies recruited in Dublin and the neighbouring counties had in its ranks members of the most aristocratic families. Another was formed of men so wealthy that it was called the "millionaire company." A son of the Archbishop of Canterbury was on the battalion staff.

The disaster, which was not communicated to the public till after the taking of Pretoria, happened at a most inauspicious moment, just when Englishmen all over the world were giving vent to such wild demonstrations of delight—it was said they exceeded those over the relief of Mafeking. Meanwhile, the Commander-in-Chief, on hearing of the disaster, sent word to Lord Methuen on the march from Hoopstadt to Heilbron, to bear to the south and hasten to the rescue of the captured battalion. The order was executed, but the Boers had gone a long distance when Methuen overtook them after a forced march of 44 miles. Though he reported by telegram that he had routed them, they did not release the prisoners, and marched on with them towards Frankfort. General Rundle endeavoured to bring help from Hibernia, where he had arrived on 1st June from Senekal, but the enemy had disappeared, nor could Brabant's Colonials find any trace of them. The depression caused by the reverse to the Yeomanry had not passed away, when still worse news was reported from the same district. The enemy had surprised the Militia battalion guarding a bridge over the Rhenoster at Roodeval, had captured it, and had thus been able to destroy the railway at various points over a tract of 20 miles. This was undoubtedly the boldest stroke the Boers had attempted during the campaign. To carry off the detachment guarding the railway close to headquarters, 145 miles along the only line of communications, was more than a bold, it was a

rash undertaking, accomplished as it was in the very middle of the divisions under Kelly-Kenny, Colvile, Rundle, Chermside, and Brabant, which were continually on the move in the east of the Orange State. The unfortunate battalion (the 4th Derbyshire) was unexpectedly attacked while detraining at Roodeval station. There can have been but little resistance, judging from the losses, 2 officers and 16 men killed, 5 officers and 77 men wounded. On the day when this unfortunate affair happened at Roodeval (7th June), adding to the sequence of "painful incidents" which occurred throughout the campaign, even at the most prosperous periods, and most disastrous from the strategic importance of the point attacked by the Boer leader, Colvile was at Heilbron, Methuen, who had come on from Lindley, where he left a brigade after the futile pursuit of the Boers who had captured the Yeomen, was 10 miles to the south, and Kelly-Kenny was at Kroonstadt with detachments guarding the railway. It was the latter general who sent the startling telegram to Lord Roberts, who at once ordered a general move towards the tract of damaged railway, and, at the same time, despatched Lord Kitchener from the capital with a small force. It was another telegram from Kelly-Kenny that re-assured the authorities, by news that troops from the north had arrived at Honing Spruit and defeated the enemy, and that General Knox was on the way to cut off his retreat. Honing Spruit was the most northerly point of the tract of damaged railway. Nothing more was known, as telegraphic communication was interrupted. No news had been heard of Methuen for four days, and it was supposed "the troops from the north" were those of General Hunter, who was marching towards Potchefstroom in the Transvaal. Instead of which, Methuen had joined Kitchener at Vredeford Road Station, the evening of the 10th, and together with him had attacked the Boers, who, it is needless to say, retired in good time, and did not lose a single prisoner. The English only managed to regain control of the railway—most important at that time—and at once set to work repairing damages and re-establishing communications.

It was reported that De Wet had 2,000 burghers in all with him, and that as many more had remained between Senekal and Basutoland; but their enterprise and mobility compensated for their small numbers. When we remember that Colvile was attacked on the way from the south towards Heilbron, Colonel Spragge on the march to Lindley, and Methuen while he was trying to assist Spragge, while, at the same time, Rundle, Chermside, and Brabant were detained near Senekal, it seems hard to believe that the two Boer commandoes of only 2,000 men each should have succeeded in holding in check such large forces, which, moreover, had been reinforced after 7th June by Kelly-Kenny's troops despatched northwards, and by those hastily sent from Pretoria by the Field-Marshal, under the personal command of Lord Kitchener. The chief of the Staff narrowly escaped capture while sleeping in a carriage at Kopje Siding, a few miles north of the Rhenoster, by a handful of Boer raiders, who, on the night of the 14th, attacked the train carrying engineers and labourers to repair the railway.

This was a party of De Wet's burghers, who had left the English no peace since 3rd June, when they captured a convoy of sixty wagons with their escort of 180 Highlanders on their way to Heilbron. On the 5th they destroyed the bridge at Roodeval, and the following day pushed on to Vredefort Road Station damaging the whole line on their way. On the night of the 7th, they captured the Militia battalion. Lord Methuen pursued them in vain: the various engagements always ended by the mere dispersal of the Boers, who returned on the 14th, to the bridge over the Rhenoster, as if they had never been attacked. Ten days later the burghers, who had remained in arms between Senekal and Ficksburg, succeeded in breaking through the line of troops under Rundle and Brabant, and re-appeared near Thaba 'Nchu. A little to the east of this district, where the guerilla warfare was entirely in favour of the Boers, some success rewarded the efforts of the English. Sir R. Buller had not attained his object by a wide flanking movement to the east through Vryheid and Utrecht; he was anxious to induce the Boers at Laing's Nek to surrender before he tried another plan. Negotiations were commenced on 2nd June at the same farmhouse where terms of peace were discussed in 1881. Christian Botha took some time to consider the proposal that his artillery and arms should be surrendered, and that his men should return quietly to their homes; after three days' delay he refused it. The guns had naturally been removed to a place of safety, but meanwhile, Sir R. Buller had turned his attention to the west. On 6th and 7th June, he occupied Van Dyk Hill, south of the road winding from Newcastle through the valley of the Ingogo up to Botha's Pass; he met with little opposition. His heavy guns were posted there, and on the south-western spur of Inkvelo; supported by their fire, Hildyard attacked all the hill positions on the 8th; the enemy's flank was threatened, and he was compelled to retreat. The following day there was a halt to let up the wagons, and on the 10th the columns advanced, and by evening had occupied a position near the junction of the Gems Vlei and the Klip on the western slopes of the Drakensberg. Buller had thus crossed the largest chain of mountains in South Africa without any great difficulty. He had, however, to fight the next day at Almond's Nek, which was defended by the enemy, who inflicted considerable loss, 140 killed or wounded. Finally, this position, as well as Laing's Nek and Majuba, which were the object of the expedition, was abandoned, to the great delight of the British soldiers, who thus, after nearly twenty years, avenged the defeat of 1881.

It must not, however, be forgotten that the English at Majuba, on 27th February, 1881, were barely 540 opposed to about the same number of Boers, whereas in June, 1900, Buller had 30,000 troops to fight 4,000 Boers scattered between Botha's Pass and Laing's Nek; and, again, the Commander-in-Chief's march had as much effect in causing the evacuation of the strong hill positions as it had on the relief of Ladysmith; Lord Roberts mentions this fact in his telegram from Pretoria of 13th June.

From the west, Colonel Mahon had arrived at Ventersdorp, and General Hunter at Potchefstroom on the 9th; Sir F. Carrington's troops

were still at Marandellas in Rhodesia. English troops had been expected for some days to land at Lorenzo Marques, and cross the Portuguese frontier in the direction of Lydenburg, to join hands with Lord Roberts' force, or, perhaps, only to remain at Komati Poort, and prevent reinforcements for the enemy entering the country, or fugitives from leaving it. But the scheme was given up, and the "Doris," which was to have landed the English at Kosi Bay, returned to Port Elizabeth.

On hearing the good news from Natal, the Field-Marshal attacked the enemy entrenched in strong positions 12 miles east of Pretoria, on the Pienaarspoort hills, overlooking the Eerstfabrieken railway station, on 11th June. A double flanking movement by two cavalry brigades and General French's mounted infantry on the left, and by a similar force under Ian Hamilton on the right, while Pole-Carew advanced in the centre, did not dislodge the Boers from their position, which they still held at sunset. There was severe fighting and heavy losses on both sides, and the burghers seemed to be fighting with all their former dash. As usual during the second period of the campaign, the Boers abandoned their positions during the night, and went off eastward with their guns. They did not get very far, for the next day Lord Roberts sent a force to attack them in their new position astride of the Middelburg Railway, at Diamond Hill. The officer charged with the execution of this rapid move was Ian Hamilton, who had so often been employed on similar missions. He took two infantry battalions and the City Volunteers, supported by the Guards' Brigade, to attack Diamond Hill, which was taken, and the Boers retreated. The indefatigable general had to fight again three days later, when he attacked the enemy's rear guard on the way to Middelburg.

Meanwhile Sir R. Buller had repaired the Laing's Nek tunnel, and was at length able to advance. On the 21st he moved from Sand Spruit to Paarde Kop, a station on the line from Natal to Heidelberg and Pretoria, through Standerton. The line was almost intact. Many burghers gave up their arms. On the 22nd Lord Dundonald occupied Standerton without opposition. On the 23rd Hamilton marched into Heidelberg, and on the following day the conjunction of the two army corps was accomplished.

The war is drawing to a close. The Boer forces, hemmed in on all sides, are diminishing daily, and probably they have not more than 15,000 or 16,000 armed men in the field. Even allowing for the enormous losses of the English, estimated on 16th June at 24,456 men (not including those in hospital, or the Yeomanry or Militia prisoners) are in such preponderating force—probably ten to one—that the struggle must soon end, and they will have subdued their once formidable enemy. Thus the prophecy of the great explorer, Henry Stanley, will be verified, for when asked months ago how long the war would last, he said it would be over by the middle of July.

This is not the time to enquire how it happens that the powerful English people, accustomed to wage colonial warfare with forces inferior to those of the native population, have, on this occasion, been obliged to

put an army of 200,000 men in the field—an army they would not have dreamed of employing in an European war—an army exceeding in numbers the whole Boer population. We must wait till the war is over; we must hear the official reports of those who have been engaged; above all, we must hear what the military attachés on either side, who are both competent and impartial, have to say.

Meanwhile the longed-for supremacy of England will soon be established in South Africa, and the Rand mines will be henceforth in British territory.

At the Paris Exhibition, near the pretty white pavilion of the South African Republic (it is hard to say now to whom it belongs) and almost touching a straw-thatched Boer cottage of reddish stone, stands an obelisk, apparently made of gold, the cubic measure of which represents the amount of precious metal taken from the Johannesburg mines between 1884 and 1899. At different heights on the obelisk are figures indicating the value of the gold extracted year by year. From £171,095 in 1887, the produce has increased annually until 1898, when it amounted to £16,403,036.

Is it not just possible that the actual cause of the war may have been the total of the gold production, amounting to £85,668,376, or rather to the figures which increased in almost geometrical proportion for three years before the war began?

NAVAL NOTES.

HOME.—The following are the principal appointments which have been made: Admiral—Sir C. F. Hotham, K.C.B., to be Commander-in-Chief at Portsmouth. Vice-Admiral—Sir W. R. Kennedy, K.C.B., to be Commander-in-Chief at the Nore. Captains—C. R. Arbuthnot to "Cambridge"; R. C. Sparkes to "Forte"; E. J. Fleet to "Phaeton"; J. Casement to "Amphion"; A. A. C. Galloway to "Scylla"; C. Burney to "Sappho"; E. P. Jones to "Gladiator"; P. Hoskyns, C.M.G., M.V.O., to "Tauranga"; R. K. McAlpine to "Hyacinth." Commanders—H. Cotesworth to "Barracouta"; W. O. Story to "Hearty"; J. de M. Hutchison to "Lion"; F. W. Dean to "Mermaid"; E. C. T. Troubridge to "Pelorus"; R. H. Travers to "Tartar"; J. P. Rolleston to "Archer"; F. A. Garforth to "Hotspur"; H. J. Laxton to "Nymphe."

All the ships specially commissioned for the Manœuvres have been paid off. The second-class cruiser "Phaeton," in the Pacific, is to be re-commissioned at Esquimalt for a new term of service on the station. The new second-class cruiser "Hyacinth" is to take the place of the "Cambrian" in the Training Squadron. The third-class cruiser "Pegasus" paid off at Chatham on the 17th ult., her crew turning over to the second-class cruiser "Sappho," which commissioned on the following day to take her place on the south-east coast of America. The third-class cruiser "Archer" commissioned at Chatham on the 30th ult., to take the place of the "Mohawk," a sister ship on the Australian station.

Launch.—The new first-class armoured cruiser "Hogue," one of the "Cressy" type, was launched from the works of Messrs. Vickers, Maxim & Son at Barrow-in-Furness on the 13th ult. Her dimensions are as follows:—Length, 440 feet; beam, 66 feet; displacement, 12,000 tons, with a draught of 26 feet 3 inches. Protection is afforded by an armoured belt of 6-inch Krupp steel, 11 feet 6 inches deep, extending 5 feet below the water-line, and 6 feet 6 inches above it; it runs for a length of 230 feet, terminating 120 feet from the bow and 90 feet from the stern, with athwartships bulkheads 5 inches thick. From the end of the belt to the stem the water-line will be protected by 2-inch hardened steel. The hull will be sheathed with teak and coppered.

The armament comprises two 9·2-inch (22-ton) guns, each mounted in armoured barbettes, the mountings being a special design of the Vickers Company, by which the guns can be loaded at any angle of elevation or training. These 9·2 guns fire a 380-lb. projectile with a muzzle energy of 14,520 foot-tons. There are also eight of the new pattern 6-inch guns, with a great range of fire, and there are distributed throughout the ship twelve 12-pounder Q.F. guns, and a number of machine guns.

The four boiler compartments of the "Hogue" take up 130 feet of the length of the ship; the coal bunkers being arranged on either side of the boiler-rooms, and over the protective deck, and an ammunition passage is situated immediately under the protective deck. There is also an athwartship bunker right forward. Thirty boilers are carried, all of the Belleville type. The boilers have been

designed with the most liberal steam generating surfaces, so that no difficulty should be experienced in obtaining the full power, and even more if of any utility, and at the same time a higher power is obtained per ton of machinery than could be realised with ordinary boilers. At full power the engines will make 120 revolutions, which is estimated to drive the ship at 21 knots.

The gun mountings under manufacture by Messrs. Vickers will be placed on board previous to the official trials being carried out, and when ready to leave Barrow, the "Hogue" will be delivered to H.M. Dockyard, Devonport.

Steam Trials.—The new torpedo-boat destroyer "Viper," the first vessel to be engined on the turbine principle, and built at the works of Messrs. Hawthorn, Leslie & Co., Newcastle, for the Parsons Steam Turbine Company, arrived at Portsmouth for her official trial on the 20th July. In appearance the "Viper" does not materially differ from the 30-knot destroyer now generally adopted, except that her funnels are of much greater diameter; but in dimensions, displacement, and deck fittings she presents no features of novelty. Leaving the Tyne at noon on Wednesday, July 18th, she reached the Spit Buoy on her way into Portsmouth at noon the following day. Her steaming distance was 440 miles, which she covered in exactly 24 hours. At no time was an effort made to try her engines, but at one time she worked up to 24 knots. But on Wednesday night, when going through the Downs, she slowed down to avoid the shipping to less than 20 knots. She had a perfectly smooth passage, and there was neither pitching nor rolling by the vessel, nor vibration caused by the engines. The temperature in the stokehold was normal. It is anticipated that her official trials will begin about the end of the month.

The following are the details of the one-hour's full-power trial of the "Viper" on 13th July, off the mouth of the Tyne:—

When the vessel left the jetty at 11.10 a.m., the displacement was 380 tons, the load carried being about 10 tons in excess of the Admiralty requirements for 30-knot destroyers. She steamed down the Tyne at 14 knots speed to Tynemouth Pier, which was passed at 11.45, and at 12.5 she passed the mile post at a speed of 36·585 knots. She had, therefore, worked up from a speed of 14 knots to 36·585 knots in 20 minutes.

The six consecutive runs were at the following speeds:—

Time on measured mile	1-38⅖	1-41⅗	1-37	1-38⅖	1-37	1-39⅘
Equivalent speed in knots ...	36·585	35·503	37·113	36·585	37·113	36·072

The mean of two runs with and against the tide was 36·849. The Admiralty mean of the six runs over the mile, with and against the tide, was 36·581 knots, which speed was also the mean for the hour's run. The mean revolutions for the hour's run was 1,180 per minute. The steam pressure in the turbines ran up to 200 lbs. per square inch. The unusually short time required for working up to full speed was as remarkable a feature of the trial as the extremely high speed recorded, both features being considered very valuable in war-vessels and cross-Channel passenger vessels. Throughout the trial the machinery worked with the utmost smoothness, and practically no vibration was experienced in any part of the vessel.

On the 31st ult. the "Viper" had a satisfactory trial of her turbine engines at Portsmouth. Instead of the full-power trial at the contract speed of 31 knots, the vessel ran at a higher speed to ascertain her coal consumption, and with 10,300-H.P. her mean speed of six runs over the measured mile was 33·8 knots. At the conclusion of the three hours' trial the bunkers were sealed and the vessel returned into harbour for an additional supply of coal, with which she went to Spithead for turning and other trials.

A Portsmouth correspondent states that the vessel averaged close upon 34 knots, or over 40 miles an hour, without forcing the engines; in fact, several more miles per hour could easily have been accomplished by the "Viper," which

during one run over the measured mile, actually made within a fraction of 36 knots per hour, or some five knots in excess of her contract speed. This is the highest speed ever attained by any war-ship in the Solent.

The new sloop "Vestal" has completed her steam trials satisfactorily. The following are the results of the thirty hours' trial at 1,000-H.P. :— Pressure of steam in boilers, 220·8 lbs. ; revolutions, 178·5 ; I.H.P., 1,014·6 ; speed, 12·86 knots ; and coal consumption, 1·42 lbs. per I.H.P. per hour. At her eight hours' full-speed trial at natural draught the results were as follows :—Pressure of steam in boilers, 225·5 lbs. ; revolutions, 204·8 per minute ; I.H.P., 1,484·7 ; speed, 13·567 knots ; coal consumption, 1·55 lbs. per I.H.P. per hour. The specification provided for 1,400-I.H.P., with an estimated speed of 13·25 knots. This completed the steam trials of the "Vestal," which passed through the whole of her tests without the slightest hitch. Her boilers are of the "Belleville" type, and were made in Devonport Dockyard.

The new torpedo-boat destroyer "Dove" has also completed her trials, with the following results :—I.H.P., 5,848 ; mean speed of six runs over the measured mile in Stokes Bay, 29·568 ; air pressure in stokeholds, 3·5 inches ; and the mean revolutions, 390 a minute.

Naval Works.—A statement has just been issued as a Parliamentary paper, showing the total estimated cost of each of the naval works, the estimated expenditure thereon to 31st March, and the amount available to meet expenditure in 1900-1901, together with the expected date of completion. The total estimated cost of the works under the three separate heads of *a*, enclosure and defence of harbours ; *b*, adapting naval ports to present needs of fleet ; and *c*, naval barracks, and for superintendence and miscellaneous charges, amounts to £23,636,922.

New Coaling Regulations.—The Admiralty have decided to constitute the coaling of the fleet a separate service as regards administration, estimates, etc. At Devonport and Portsmouth a retired lieutenant is to be appointed as coaling officer, whose duty, under the Commander-in-Chief, will be to take charge of all coal-lighters and tugs, and superintend the supply of coal to ships. The lieutenants will be assisted by a retired warrant officer. At Sheerness the general supervision is to be undertaken by the captain of the port guard-ship, and a warrant officer will be appointed to act under him as coaling officer. The naval store officer will arrange the coaling operations from the shore.

Armour Plate Trials.—For some time past Sir W. G. Armstrong, Whitworth & Co., Ltd., have been making great extensions at their Openshaw works, with the object of producing armour plates of the highest quality. These extensions are now nearly completed. On the 3rd inst., the official preliminary trial took place on two plates produced at these works by a special process, the particulars of which are not available for publication at present. The plates were of the normal size for trial plates—viz., 6 feet by 8 feet by 6 inches thick, and were installed in the frames provided in the proof cells "Resistance" and "Thunderer," on Whale Island. The trials were conducted under the superintendence of Captain W. H. May, of the "Excellent," and Lieutenant S. R. Drury-Lowe, R.N. Five shots were fired at each plate with Holtzer armour-piercing shell at the velocities laid down for this thickness of plate in cemented steel. Both plates defeated all the projectiles, and were pronounced as satisfying the Service requirements. It would seem, therefore, that a fresh source of armour supply is now available for the equipment of ships under construction for the Navy.—*Times, Naval and Military Record, and other sources.*

FRANCE.—The following are the principal promotions and appointments which have been made: Vice-Admirals—M. E. de Maigret to command of Mediterranean Squadron; E. Pottier to command of Squadron in China; C. H. Godin to command of 4th Arrondissement Maritime (Rochefort). Rear-Admirals—L. A. Caillard to command of Light Division of Mediterranean Fleet; C. Aubry de la Noë to command of a Division of Mediterranean Fleet; C. De Bausset Roquefort Duchaine L'Arbaud to command of 2nd Division of Northern Squadron; P. F. C. Gourdon to command of Cruiser Division of Northern Squadron. Capitaines de Vaisseau—F. G. Rabouin to "Pothuau"; P. A. Houette to "Duguay-Trouin"; P. Auvert to "Bruix"; R. Foy to "Chanzy"; E. L. Turnet to "Latouche-Tréville"; J. M. Nény to "Redoutable"; J. A. de Surgy to "Guichen." Capitaines de Frégate—G. Monneyrés to command of fixed defences at Toulon; P. A. Le Bris to "Suchet"; E. P. Guépratte to "Vautour"; A. M. Miron de l'Espinay to "Chasseloup-Laubat"; G. M. Lefèvre to "Bugeaud."—*Le Journal Officiel de la République Française.*

Vice-Admiral de Maigret, the newly appointed Commander-in-Chief of the Mediterranean Squadron is to hoist his flag, according to present arrangements, on board the new first-class battle-ship "Saint Louis," which is shortly to be commissioned at Brest, where she has been carrying out her trials, and she will then proceed to Toulon, where she is to relieve the "Brennus," the present flag-ship. Vice-Admiral Pottier, who has been appointed to the command of the naval forces in China, will hoist his flag in the second-class battle-ship "Redoutable," which has been detached for the purpose from the Northern Squadron, and is now *en route* to her new station. Rear-Admiral Caillard, who was lately Chief of the Staff at the Ministry of Marine, has been appointed to the command of the Cruiser Division of the Mediterranean Squadron, in succession to Rear-Admiral Maréchal, and has hoisted his flag on board the first-class armoured cruiser "Pothuau" at Toulon. Following what has been done in the Mediterranean, the cruisers and light-vessels of the Northern Squadron have been formed into a separate Cruiser Division, and Rear-Admiral Gourdon has been appointed to the command.

Rear-Admiral Mallarmé, in command of the Reserve Squadron of coast-defence ships, has temporarily transferred his flag to the "Amiral-Tréhouart," while the "Bouvines" is making good defects in the dockyard at Brest. According to present arrangements, the Reserve Squadron will remain for the present in the Channel instead of returning to the Mediterranean.

The China Squadron.—The French squadron in China has been materially strengthened, and now consists of the following vessels:—

Second-class battle-ship—"Redoutable" (flag-ship of Commander-in-Chief).

First-class armoured cruiser—"Amiral-Charner."

First-class cruisers—"D'Entrecasteaux" (flag-ship of Rear-Admiral Correjolles), "Guichen."

Second-class cruisers—"Descartes," "Jean-Bart," "Pascal," "Friant," "Bugeaud," "Chasseloup-Laubat."

Gun-boats—"Zélée," "Décidée," "Vipère," "Lion," "Surprise," "Avalanche," "Comète."

Despatch-vessels—"Bengale," "Alouette."

Troop-ships—"Nive," "Vinh-long," "Caravane."

The following table shows the tonnage, number of guns and strength of the crews of the squadron. In the columns marked Artillery the first shows the number of guns of 194 millimetres (7·6-inch) and over, the second of guns between 164 millimetres (6·48-inch) and 90 millimetres (3·5-inch), and the third of Q.F. guns of 65 millimetres (2·5 inch) and less, not counting the boats' and field guns.

Ships.	Tonnage.	Artillery.			Effectives.	
		Large.	Medium.	Small.	Officers.	Men.
Redoutable	9,372	8	6	23	31	625
D'Entrecasteaux	8,123	2	12	18	21	538
Amiral-Charner	4,778	2	6	16	22	372
Guichen	8,282		8	15	27	577
Descartes	4,033		14	12	23	379
Jean-Bart	4,109		10	18	20	356
Pascal	4,015		14	12	14	369
Friant	3,944		10	11	14	323
Chasseloup-Laubat	3,885		10	15	14	327
Bugeaud	3,870		10	15	14	327
Bengali	591		2	4	5	65
Zélée	647		2	8	7	93
Vipère	486		4	4	5	71
Lion	503		4	6	6	71
Surprise	627		2	8	6	93
Décidée	647		2	8	7	93
Comète	495		4	2	6	71
Avalanche	141		2	3	1	47
Nive	5·989		5	5	12	275
Vinh-Long	6·094		5	5	12	575
Caravane	1·714		...	...	5	68
Alouette	507		2	5	5	66
	72,852	12	134	213	256	5,480

The Loss of the "Framée."—Vice-Admiral Fournier, commanding the Mediterranean Fleet, has forwarded his report on the unfortunate sinking of the "Framée" (destroyer) by collision with the flag-ship "Brennus," off Cape Trafalgar, on the night of 11th August, while the fleet was steering for the Straits of Gibraltar, being at the time on passage from Royan to Toulon.

The night was clear and calm, with a bright moon, the fleet proceeding in line ahead, the station of the "Framée" being off the starboard beam of the flag-ship, in line with the after bridge. Suddenly, while a signal was being made to her shortly before midnight, the "Framée" was observed to be steering at full speed for the "Brennus." Everything possible was done on board the latter ship to avert a collision by the officer of the watch, but without success, the "Framée" striking the "Brennus" on the starboard bow and sinking almost immediately.

The fleet stopped, and boats were lowered, but, notwithstanding the clearness of the night and smooth sea, only 14 of the crew of the "Framée" were saved. Her officers were all on deck at the time, but not one was rescued. A quartermaster of the "Brennus," while the vessels were still in contact, held out his leather belt to Commander De Mauduit Du Plessix, of the "Framée," but that officer turned away, saying simply, "*Tout à l'heure,*" and almost immediately afterwards the "Framée" sank, and he went down with her. As no officers were saved, it is difficult to account satisfactorily for the disaster, but it is stated by one of the survivors that he heard the order "20° to port!" given by Commander Du Plessix, and it is supposed that by some mistake the helm was put the wrong way, and that the mistake may be due to the system of communication for the transmission of orders, which is said to be defective.

The "Framée" was quite a new vessel, and had only just joined the Mediterranean Fleet, not having been present at the review at Cherbourg. Her dimensions were:—Displacement, 311 tons; length, 56·60 metres (185 feet); beam

5·02 metres (16·4 feet); H.P., 5,700; speed, 26 knots; armament, one 65-millimetre (2·5-inch) and six 47-millimetre (1·8-inch) guns and 2 torpedo-tubes.

Complement, 56 officers and men, of whom 42 have been drowned.

Steam Trials. — The new first-class battle-ship "Saint Louis" has been continuing her trials, which have now practically concluded. Her full speed under forced draught is supposed to be 18 knots, but considerable difficulty has been experienced in getting this speed out of her.

The new first-class cruiser "Chateaurenault," a sister ship to the "Guichen," now in China, has been continuing her trials off Toulon. During a twenty-four hours' trial, with 14,000-I.H.P., the engines made 110 revolutions, and the mean speed maintained was 21 knots; the coal consumption, per H.P. per hour, being 0·679 kg.; at another trial, with the engines developing only 8,000-I.H.P., the revolutions being 97, the speed maintained was 20 knots. It is interesting to remark that the "Guichen," which is supposed to be a 23-knot ship, made the run from Brest to Saigon in 28 days, or an average of a little over 16 knots, which is slightly less than the speed maintained by the "Isis" and the "Dido," two of our nominal 20-knot cruisers, between Malta and Hong-Kong.

The first-class battle-ship "Hoche" has undergone fresh trials of speed at Brest, her first trials having proved unsatisfactory owing to insufficiency in the steam supply. In the first trials the engines developed 10,912-I.H.P., against 12,000 expected, and she attained a speed of 15·92 knots, with a consumption of coal which would have emptied her bunkers in a run of 803 miles at that rate of speed. In the new trials her engines developed sufficient power to give her a speed of 16 knots, the consumption of coal being smaller, so that her supply would last her for a distance of 1,292 miles at the 16-knot rate of speed. This is considered satisfactory. The chief effect of the transformation has been to decrease her draught. She used to be called a submarine battle-ship, but now she has more than 2 feet of freeboard. This has been effected by reducing her superstructure, her after military mast, and the total weight of her artillery. It is expected that she will join the Northern Squadron in October.

The Augmentation of the Fleet.—The report of the *Commission de la Marine* on the *projet de loi* for the augmentation of the fleet, presented by the Government in January last, has been laid before the Chamber. The reporter M. le Moigne, has studied the matter most carefully. The report approves of the whole expenditure proposed of 712 millions (£28,480,000), but reduces the term of completion of the vessels by one year, fixing it at 1st January, 1907, showing the importance attached to the prompt execution of the work. Without making further alterations in the proposals of the Government, the report nevertheless considers that in ordering only 28 submarine boats the Government has not gone far enough, and expresses a desire that more of these novel craft should be commenced, the difference in cost being made up by reducing the number of new torpedo-boats proposed to be constructed.

The debate in the Chamber on the Government proposals regarding the augmentation of the fleet and works to be undertaken at the naval ports may be summarised as follows:—

The chief speaker was M. Lockroy (former Minister of Marine), who advocated fast armoured cruisers as the type of fighting-ship of the future in place of the heavy battle-ship proposed to be built by the Government, cruisers being superior on account of their greater speed and mobility, and if properly constructed almost equal to battle-ships in their offensive power.

The case for battle-ships was supported by M. le Moigne and M. Chautemps, who congratulated the Government in sticking to the old traditions of the Navy and to tried experiences. As regards the superiority of the French over the English naval guns, which had been questioned, M. Chautemps brought documents to prove that the French guns are the best and most powerful, and he concluded

by advocating the construction of the 15,000-ton ships proposed as the best type of battle-ship.

M. Aimond, on the same side as regards the question of speed spoken of by M. Lockroy, said speed should be placed third after artillery and after armour. Speed might fail when most wanted. How was it that at the battle of Santiago the swift "Cristobal-Colon" had been overtaken and put out of action by the ponderous but powerful "Oregon"? As regards the fast cruisers advocated by some to prey on the enemy's commerce, M. Aimond mentioned the precautions taken by England to secure the passage of the troops to South Africa. He stated that 62 English cruisers were posted along the track taken by the transports, and 80 others were assembled in the Channel ready for any eventuality. (Of course, this is not correct.) "Now," continued M. Aimond, "I ask those who favour the *guerre de course*, who say that battle-ships should be abolished in our Navy, in what kind of position they would have found themselves. Would they only have had to do with merchant-ships, as they believe, with ships without defensive power and easy of capture? No, the *guerre de course* in these conditions would have ended in a series of regular naval battles, and the English cruisers being in a position to mutually help each other, our isolated cruisers would have been condemned to certain loss. The *guerre de course* can only be an accessory means of attack; in a naval war the battle-ship will always be required, and it is necessary to make such ships as powerful as possible."

M. Cornille Pelletan objected to the proposed works to be undertaken at the naval ports, which did not seem to him to be allocated according to the best interests of national defence; he proposed as an amendment the creation of a harbour of refuge at the Étang de Berre for merchant-vessels in time of war, and also as a shelter for the fleet. He criticised the works proposed at Cherbourg and Rochefort, Cherbourg being open to bombardment by modern artillery, but he subsequently admitted that the submarine boats, which form part of the mobile defence of Cherbourg, would considerably increase the radius of the dangerous zone for ships attacking that place, and would make the port as secure as it was before. He also advocated an increase in the torpedo-boats and submarine boats of the mobile defences.

There were other amendments by Admiral Réunier for Rochefort and M. Morineau for Algeria, and in the end the Chamber decided to refer the *projet de loi* for works at the naval ports back to the *Commission de la Marine* for re-consideration; it is doubtful, however, whether the vote will suffice for the different proposals.

M. Pelletan's amendment requires 6 million francs for the defence of Corsica 10 millions for the defence of Algeria, and 6 millions for the Étang de Berre, and the 141 millions allocated for works become no longer sufficient.

The Government proposals for the augmentation of the fleet were afterwards voted by the Chamber, the part concerning six battle-ships, five armoured cruisers, and twenty-eight destroyers being approved without modification, but 50 million francs more than was asked for was voted for additional mobile defences, such as torpedo, submarine, and submersible boats.

Movements of Ships.—The torpedo-boats "Turco" and "Averne," appropriated for the mobile defence of Tunis, to be stationed at Bizerta, were commissioned at Brest on 15th July.

The first-class battle-ship "Hoche," having completed her trials, is to be commissioned to take the place of one of the battle-ships in the Northern Squadron, which in turn will be placed in reserve. The destroyers "Yatagan" and "Fauconneau" will also be attached to the Northern Squadron.

The "Meurthe" will replace the "Eure" in the Far East, and the two small light-draught gun-boats "Argus" and "Vigilante" will commission at Hong-Kong.

In the Indian Ocean the second-class cruiser "Catinat" will replace the third-class cruiser "D'Estaing." In the Pacific the gun-boat "Zélée" will replace the schooner "Papeete" and the aviso-transport "Durance" the "Aube."

The destroyer "Lévrier" will join the mobile defence of Corsica.

The "Duguay-Trouin," ex Tonquin, will commission at Brest to replace the cadet training-ship "Iphigénie."

The programme of the Summer Manœuvres, as given last month, has been carried out. No particulars are to hand, but great credit is taken in the French press for the punctual and successful junction between the two fleets in the Atlantic. There is no reason to suppose that a rendezvous had not been previously arranged, so this operation does not seem specially deserving of attention.

The Naval Review at Cherbourg on 19th July by the President of the Republic passed off with great *éclat* in splendid weather. Admiral Gervais hauled down his flag on the 21st.

Vice-Admiral Fournier, with the Mediterranean Squadron, consisting of the battle-ships "Brennus," "Bouvet," "Jauréguiberry," "Charles Martel," "Charlemagne," and "Gaulois"; the armoured cruisers "Pothuau," "Chanzy," "Latouche-Tréville"; torpedo-depôt-ship "Foudre"; the second-class cruisers "Du Chayla," "D'Assas"; the third-class cruisers "Lavoisier," "Galilée," "Linois"; the destroyers "Dunois," "Hallebarde," "Durandal," and sea-going torpedo-boats "Flibustier," "Forban," and "Cyclone," arrived at Brest on 22nd July, to give 8 days' leave to the crews, granted by the Minister of Marine before returning to the Mediterranean.

The Coast-Defence Squadron, consisting of the "Bouvines" (flag), "Jemmapes," "Valmy," and "Amiral Tréhouart," under Rear-Admiral Mallarmé, remain at Cherbourg, attached to the 1st Arrondissement Maritime.

During their passage to Brest, the cruisers of the Northern Squadron practised wireless telegraphy, and communication was effected at a distance of more than 40 miles.

The second-class cruiser "Chasseloup-Laubat" left for China on 27th July.

The second-class cruiser "Bugeaud" arrived at Port Said on 27th July, on her way to China.

The "Drôme," with orders to instal a coal depôt at Muscat (Persian Gulf), left Toulon on 20th July.

Naval Education.—The Commission appointed by the Minister of Marine on Naval Education has presented its report. The chief recommendations are: revision of the entrance examination, and a corresponding alteration in the course of study at the *École Navale*. It is proposed that the entrance examination be made more popular, so as to draw candidates from a wider circle, by reducing the standard of mathematics, which will allow of candidates passing straight from school instead of having to go to the expense of being specially prepared or crammed as at present. English is to be compulsory both writing and *vivâ voce*, also *vivâ voce* Latin or German. Italian and Spanish and other modern languages will not form part of the examination in future.

The Commission unanimously was of opinion that the *École Navale* should be on shore, near the sea, and that the theoretical instruction given will be less hampered and a great gainer by this change.—*Le Yacht* and *Le Temps*.

THE NETHERLANDS.—*Naval Estimates for 1900.*—The total sum demanded amounts to 15,959,262 florins (£1,329,938), the principal items being as follows :—

	Florins.	£
Administration	368,984·25	(30,748)
Matériel and Naval Construction ...	6,755,905	(562,992)
Personnel	4,321,208·79	(360,100)
Pilotage and Light Service, etc. ...	2,392,641	(199,387)
Pensions, Half Pay, etc.	2,060,527	(171,710)

The Budget is accompanied by an explanatory statement by the Minister of Marine, of which we give a short *résumé* :—

The proposals for the increase of the Fleet, made in 1896 (for 1897) by the Minister, Van der Wijch, provided for the naval *matériel* necessary for :—

a. The defence of the East Indies.
b. The general service of the Fleet.
c. The defence of the home waters.

It was then decided that the Auxiliary Squadron for the East Indies should be composed of six powerful ships. Two protected cruisers of the "Holland" type were laid down, and two more, with two battle-ships of the "Koningin-Regentes" type, are to be taken in hand. For general service, and more especially for service in the East Indies, it has been found that the ships best fitted are those of the "Holland" and "Koningin-Regentes" classes. With the view of affording the necessary reliefs for the Auxiliary Squadron, which take place every three years, and of having a couple of each class in reserve, 7 protected cruisers and 5 battle-ships will be required. The naval *matériel* required for the defence of the home waters is necessarily determined by the special system of defence which the peculiar character of the coast of Holland demands. The plan of defence has been carefully studied at different times, and the following dispositions made :—

a. At the Helder.—The principal duty of the Navy at this point is to keep open, as far as possible, the channels of the Vlie and Texel, and to impede a blockade, which might render difficult the mobilisation of the Army and coast batteries. It has to lay down the submarine mines, and to protect them once a blockade is established. The battle-ships can then, in concert with the torpedo-vessels stationed in other channels, avail themselves of any favourable opportunity which may occur for making attacks upon the enemy. There will be required for this work 5 battle-ships, 4 gun-boats, and 6 large torpedo-boats.

b. The Harbours of Ijmuiden and Nieuwe Waterweg.—The forts and barriers are the best form of defence for the approaches to these harbours. Ships cannot be employed here as supports, since they cannot manœuvre within the defences. There is only a gun-boat stationed on the south side of Nieuwe Waterweg for the defence of the barrier. As these harbours offer sufficient room for torpedo-boats to act, 3 large ones should be attached to each.

c. The Goeree, Hollandsch Diep, and Volkerak Channels —The work of the Navy is here the same as at the Helder, with this difference, that at Goeree the channel is not so deep. It will be necessary to station here 3 small battle-ships, 6 gun-boats, 6 large and 6 small torpedo-boats.

d. The Zuiderzee and its Approaches, including the Vliegat.—Here the fleet must strain every nerve to prevent an enemy penetrating into the Vliegat ; so it is necessary that ships powerfully armed and torpedo-boats should be employed. But if the enemy has already entered the Zuiderzee, some smaller ships may be more useful. So long as the Zuiderzee is not cut off from the North Sea, the heavy ships can be employed for the defence of the north coast of Holland, with Amsterdam as a base, and for the conveyance of troops. These ships should have a maximum draught of water of 9 feet, with an armoured deck, but no belt. So long as the Zuiderzee is not drained, it will require for its defence 3

monitors, 5 gun-boats, 3 large and 3 small torpedo-boats. When the breakwater from the Frisian coast to that of Holland is constructed on the plan proposed by the commission, there will only be required in that channel 2 gun-boats for the conveyance of troops.

e. Nieuwe Merwede and the Waal.—There will be 2 gun-boats required for the defence of these channels.

Seventeen gun-boats are therefore necessary, although it might be possible to reduce this number to 14, as unless the enemy attacked every position at once the defending vessels could be moved from one point to another, as requisite. Although the torpedo-boats may similarly be able to render mutual assistance to each other, yet it will not be advisable to reduce the number of large torpedo-boats to less than 21, as the more numerous they are, the greater the chance of their attacks being successful

It thus appears that our fleet of the future must consist of 8 battle-ships, 7 protected cruisers, 3 small battle-ships for the inner waters, 3 unarmoured monitors, 21 large torpedo-boats, 12 small torpedo-boats, 14 gun-boats, and 5 schooners, 3 of which will serve for the protection of the fisheries. We have already two good types for our large battle-ships and the protected cruisers. It is proposed that the small battle-ships should have a nickel-steel belt, 6 inches thick, but tapering to 4 inches at the extremities, with a depth of 5 feet 6 inches, and reaching 3 feet 3 inches below the water-line. The armoured deck is to be 2 inches thick, and the conning-tower 8 inches. Their dimensions will be as follows:—Length, 200 feet; beam, 42 feet 6 inches; displacement, 2,130 tons, with a draught of 13 feet 2 inches. The engines are to indicate 850-H.P., giving a speed of 10 knots. The armament will consist of two 40-calibre 21-centimetre (8·2-inch) guns in nickel-steel armoured turrets, one forward and one aft, the foremost turret being higher out of the water than the after, and six 40-calibre 3-inch Q.F. guns. The monitors and gun-boats will be of the same type as those proposed for the fleet in 1896; but the shields for the guns in the monitors will be of thicker steel, and the 1·4-inch Q.F. guns will be superseded by 3-inch. The large torpedo-boats were at first to have been of the same type as the French torpilleur-de-haute-mer "Forban," with a speed of 30 knots, but the "Boa," the new sea-going torpedo-boat built for the Austro-Hungarian Navy by Yarrow, is the type now selected, the cost of the latter being only 280,000 florins (£23,333), as against 460,000 florins (£38,333) for the "Forban."

The cost of the proposed new ships in millions of florins will be as follows:—

3 battle-ships of the "Kortenaer" type	8·3
5 „ of the "Koningin-Regentes"	21·5
3 „ for the inner waters	6·16
7 protected cruisers	21·0
3 monitors for Zuiderzee	3·84
21 large torpedo-boats	5·88
12 small „	0·72
14 gun-boats	4·9
5 schooners	2·375
Total	74·675

There are, in addition, at present under construction, the following vessels:—

3 battle-ships of the "Kortenaer" type	8·3
2 „ of the "Koningin-Regentes" type	8·6
1 „ for the inner waters, of the "Reinier-Claeszen" type	1·96
7 protected cruisers	21·0
2 schooners	0·95
Total	40·81

The credits for the ships to be constructed amount to 33·865 millions of florins (£2,816,666), and if the cost of the construction of the "Koningin-Regentes" and her sister ship be added, amounting to 7·217 millions, the total required for the increase of the Fleet will be 41,082,000 florins. By authorising each year an expenditure of 4·2 millions for new construction the fleet will be raised to its proper strength by 1909. Allowing a life of twenty years for the large ships and of fifteen years for torpedo-boats, the strength of the Fleet will be lowered in 1911 by the striking off the effective list of the "Reinier-Claeszen" and one of the schooners employed on the fishery duties; then will come the Koningin-Wilhelmina, a second schooner and three ships of the "Kortenaer" type. The maintenance of the fleet requires annually a sum of about 4 millions of florins. The credits for the commencement of the construction of the battle-ship for the inner waters, the three torpedo-boats of the "Boa" type, and a gun-boat are carried over until next year.

In view of the increase of the Fleet, the active list of officers is to be raised to 676 and of the men to 10,289.

	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	TOTAL
Large battle-ship No. 1 "Koningin-Regentes"	2169·2	847·7	—	—	—	—	—	—	—	—	3016·9
Large battle-ship No. 2	1043·6	1612·3	1544	—	—	—	—	—	—	—	4200
" " " 3	—	150	1500	1550	1100	—	—	—	—	—	4300
" " " 4	—	—	—	153·1	1750	1700	696·9	—	—	—	4300
" " " 5	—	—	—	—	—	210	1223·1	1800	1066·9	—	4300
Small battle-ship " 1	187·1	1200	712·9	—	—	—	—	—	—	—	2100
" " " 2	—	—	—	—	—	600	1500	—	—	—	2100
Monitor ... " 1	—	—	—	—	—	500	780	—	—	—	1280
" ... " 2	—	—	—	—	—	—	—	270	1010	—	1280
" ... " 3	—	—	—	—	—	—	—	—	53·1	1226·9	1280
Gun-boat ... " 1	50	300	—	—	—	—	—	—	—	—	350
" ... " 2-4	—	—	443·1	606·9	—	—	—	—	—	—	1050
" ... " 5-7	—	—	—	1050	—	—	—	—	—	—	1050
" ... " 8-10	—	—	—	—	1050	—	—	—	—	—	1050
" ... " 11	—	—	—	—	—	350	—	—	—	—	350
" ... " 12-14	—	—	—	—	—	—	—	1050	—	—	1050
Large torpedo-boat No. 1-3 ...	750	90	—	—	—	—	—	—	—	—	840
" " " 4-6 ...	—	—	—	840	—	—	—	—	—	—	840
" " " 7-9 ...	—	—	—	—	—	840	—	—	—	—	840
" " " 10-12 ...	—	—	—	—	—	—	—	840	—	—	840
" " " 13-18 ...	—	—	—	—	—	—	—	—	1680	—	1680
" " " 19 ...	—	—	—	—	—	—	—	—	210	70	280
" " " 20 & 21 ...	—	—	—	—	—	—	—	—	—	560	560
Small torpedo-boat " 1-5 ...	—	—	—	—	300	—	—	—	—	—	300
" " " 6-9 ...	—	—	—	—	—	—	—	240	—	—	240
" " " 10-12 ...	—	—	—	—	—	—	—	—	180	—	180
ANNUAL TOTAL ...	4200	4200	4200	4200	4200	4200	4200	4200	4200	1856.9	39656·9

1 florin = 1s. 8d., or 12 florins = £1.

Mittheilungen aus dem Gebiete des Seewesens nach *Marineblad.*

UNITED STATES.—*The Superposed Turrets of the new battle-ships "Kearsarge" and "Kentucky."*—It is safe to say that no recent design in war-ship construction has produced such a widely extended and earnest discussion as that which forms the subject of the first page illustration of this issue. (See Frontispiece.) When it was first made public it was met with a storm of adverse criticism from the conservative element among naval officers, both of the line and staff; though it is only fair to say that the opponents of the double turret were to be found chiefly among the officers of the Construction Department, the obvious military advantages of the double turret commending it at once to the men who will carry our ships into action. It is not our intention in the present article to enter into any extended statement or discussion of the advantages or disadvantages of the system, but rather to make clear to our readers the great ingenuity and skill with which the

Construction Department has given practical expression to the daring suggestion of Lieutenant Strauss, that four guns of the main battery should be installed in a two-storeyed turret, the 8-inch guns above and the 13-inch guns immediately beneath them. The credit of the original design undoubtedly belongs to the gentleman named, whose idea received sanction and encouragement from Admiral Sampson, at the time chief of the Bureau of Ordnance, with which department Lieutenant Strauss was connected.

When the matter came into the hands of the Bureau of Construction, several important recommendations were made and adopted, including the use of the oval balanced turret, which was coming into general use in European Navies at that time, and the use of electricity for turning the turret, elevating the guns, and working the ammunition hoists. The many new features involved in these turrets, and the utter lack of precedent in the Navy, rendered the details of the design a very complicated and difficult problem. That these were very aptly worked out by Naval Constructor Woodward, who, as superintending constructor, was in immediate charge of the work, is evident from a study of the drawings and proved by the success of the recent gunnery trials of the "Kearsarge."

The illustration on our front page is a vertical section through the "Kearsarge," taken on the centre line of the vessel, and it affords a view of the complex structure of the vessel throughout its whole height from the keel to the roof of the upper gun emplacement. At the bottom of the section is seen the deep vertical keel plate which may be said to form the backbone of the vessel, whose height shows the depth between the outer and the inner bottom. The space between the inner bottom and the 3-inch protective deck is devoted to the magazines and handling rooms, the 8-inch ammunition being located above that of the 13-inch guns.

The handling room, so-called because it is the compartment into which the shells are brought and placed in the hoists to be carried up to the guns above, communicates through water-tight doors with the magazines. The powder charges are contained in copper cylinders which are arranged neatly in racks in various compartments which lie immediately around the handling rooms, communication being had by way of water-tight doors, while the other doors lead into similar compartments where the projectiles are stored. A system of overhead trolleys runs from the various magazines into the handling rooms, by means of which the powder and shells may be picked up from the racks and carried to the cages of the ammunition hoists. There are four of these hoists, two to each turret. Two of them start from the centre of the 13-inch handling room, and slightly on either side of the vertical axis of the turret, and extend upwardly in an easy curve to the rear of the breech of the two 13-inch guns, there being, of course, one hoist to each gun. The hoisting is done by means of electrical motors, operating wire ropes, which lead through a system of pulleys up to the breech of the guns and thence down to the ammunition cage. The cage travels upon a curved plate-steel trackway, as shown. The arrangement of the ammunition rooms and handling rooms of the 8-inch ammunition is generally similar to that for the 13-inch guns, a plate-steel trackway, smaller in size, but similar in general appearance and construction to the 13-inch hoists, running from the handling room up to the breech of the 8-inch guns, the cage being similarly raised by means of a wire rope operated by electrical motors. The 8-inch trackways pass between the hoists of the 13-inch guns, and the matter has been so carefully worked out that, in spite of predictions to the contrary, there is no interference between the two sets of hoists.

The protective deck, which in the "Kearsarge" is 3 inches thick, is indicated by the full black line above the 8-inch magazines. It slopes from the forward end of the amidship rapid-fire battery downward and forward to a junction with the massive structural work of the ram bow into which it is worked. Immediately upon it is built up the great circular wall of the barbette, which rises from this deck to project a few feet above the main deck of the vessel. The

forward portion of it is 15 inches in thickness, but the sides and the rear, owing to the fact that they are flanked by a wall of 5½ inches of side armour on each side of the vessel, are only 12½ inches thick. Immediately behind this armour is a backing of oak timber, which in its turn is backed up by the heavy steel framing of the barbette. Within the barbette, and at a height of about 8 or 10 feet above the protective deck, is a massive circular track upon which is carried, and upon which rotates, the massive double turret, the rollers upon which the turret turns being clearly shown in the engraving. Just inside of the circle of rollers, and bolted to the circular table on which the track is placed, is a large circular rack which is engaged by the turning gear with which the turret is operated. The power for turning the turret is supplied by two 50-H.P. electric motors which are located below the floor of the 13-inch turret. These motors revolve in the same direction, both driving through bevel gears a horizontal shaft which runs across the turret. The shaft carries at one end a right-hand and at the other end a left-hand worm, each of which engages with a worm wheel at the top end of a vertical shaft. At the lower end of the vertical shaft of each of the worm wheels is a pinion which meshes with the circular rack inside the barbette, thus driving the turret.

One 20-H.P. motor is located under the central girder of the turret for the operation of each of the 13-inch ammunition hoists, the arrangement being shown in the illustration. Each 8-inch ammunition hoist is worked by a 6-H.P. motor, and there are also special motors for elevating the 13-inch guns and for working the rammers which are located to the rear of the breech of these guns. There is also a system of electrically-driven ventilators for blowing the gases out of the bores of the 8-inch and 13-inch guns after firing.

It will be noticed that whereas the front wall of the 13-inch turret lies within the circle of the barbette, the rear wall extends several feet beyond it. This is due to the fact that the section is taken on the longer axis of the turret, which is elliptical in shape, this form being better suited to the movements of the gun crews, reducing the unoccupied space at the sides and giving more space to the rear of the guns where it is needed. The elliptical turret is otherwise known as the balanced turret, the weights being so adjusted that there is practically no excess of load on any part of the turn-table. The front walls of the turret are 17 inches in thickness, decreasing to 15 inches at the sides and rear.

The 8-inch turret is located somewhat to the rear of the centre of the 13-inch turret, and is placed immediately upon the 3-inch steel roof of the latter; its front wall is 11 inches and its side and rear walls are 9 inches in thickness. The 13-inch turret is provided with three sighting hoods, one shown in section immediately in front of the 8-inch turret, and one being placed on either side of the 8-inch turret. It was feared that when the 8-inch guns were fired trouble would be experienced in these sighting hoods from the blast and the flame of the gases, but in the trials recently carried out off Old Point Comfort it was found that these hoods were tenable at all times.

The test of the "Kearsarge" above referred to was carried out for the purpose of determining whether the structure of the ship, and more particularly of the double turrets, could sustain the heavy strains which would be set up when the guns were fired, and especially by firing the four guns simultaneously. Both batteries of the double turrets and those of the rapid-fire guns amidships were tried under all possible conditions, and the results proved to be eminently satisfactory, both to Admiral Sampson and Captain William M. Folger, who is in command of the "Kearsarge." The results of the trial can best be given in Captain Folger's report to the Navy Department, in which he says:—"The double turret was thoroughly tested, and is an assured success both from military and structural standpoints. There was no interference between the planes of the guns, or inconvenience from blast or smoke. The structure, tested with the simultaneous discharge of three guns, is amply strong to withstand the united shock of the four guns of either turret. Only the absence of a suitable device for the simultaneous

discharge of all the guns prevented the final test. Both pairs of 8-inch guns were tested in simultaneous firing." In a subsequent test made a few days later all four guns in both turrets were discharged simultaneously in broadside without any harmful results to the structure of turrets or ship, or undesirable effects upon the stability.—*Scientific American.*

The Double-Turret System on Trial.—The favourable results of the recent trial of the double turrets of the "Kearsarge" can scarcely be over-estimated in the far-reaching influence which they will exert upon the future designs of United States war-ships. Although the tests are not final, they were so far successful as to clear up many of the doubts which had existed as to the practicability of this novel and daring method of mounting the main battery of a war-ship.

The history of the double-turret controversy shows that the objections to the design may be summed up as of two kinds, structural and military. The structural objections which were raised chiefly, as they properly should be, by the Construction Department, have been met and successfully overcome by our naval constructors, who stated early in the history of the controversy that, if the turrets were finally approved on military grounds, they could and would overcome the mechanical difficulties involved in working out the installation. Briefly stated, the structural objections are:—The concentration of weight so near the ends of the vessel, tending to impair her seaworthiness; the risks in docking due to this concentration; the complication involved in concentrating at one point the large ammunition supply necessary for the four guns, and in the juxtaposition of the four ammunition hoists and the necessary power to work them; and last, and perhaps the chief of all, the abnormal stresses to which the substructure of the double turrets would be subjected from the simultaneous recoil of four heavy guns. These difficulties, however, have been cleverly met and removed.

The military objections might seem, strictly speaking, to be a matter for the exclusive consideration of the line officers who command and fight the ship. Indeed, the argument is advanced by them that as the structural side of the question has been completely solved, the problem has passed out of the hands of the Construction Department, and the determination of the value of the double-turret system and of its incorporation as a permanent feature in future battle-ships should be left to the officers of the line. We cannot say that we agree with this position, for it seems to us that a naval constructor has not only to devise proper means for disposing and protecting the guns, but he should be entitled to determine whether those dispositions are such as will secure the very best offensive and defensive results.

The military objections as expressed by Rear-Admiral Hichborn are:—

1. The danger of all four guns being disabled by one successful shot.
2. The reduction in the number of the 8-inch gun positions, as compared with the "Oregon" type, and the attendant danger that in the last stages of a hard-fought action no 8-inch fire would be available on account of disablement; and
3. The lack of mobility in the 8-inch guns, arising from the fact that they must be trained with the 13-inch guns beneath them, whereas it might be desirable to use the heavy guns on one portion of the ship and the lighter guns on some other.

All three of the above objections are of the "too-many-eggs-in-one-basket" kind, and it seems to us that while theoretically they are plausible, the teachings of our late naval war show that they may be pushed entirely too far. If the positive advantages of the system are evident—and they are admitted to be—these theoretical limitations may easily be exaggerated, as the following considerations will show. The argument against the concentration of four guns in one turret only possesses weight if the possibility of the turret's being hit is great,

The engagements of the Spanish-American war prove that the risk is extremely, indeed ridiculously, small. In the naval battle off Santiago, official statistics show that the total number of shots fired by the United States ships, exclusive of those from the "Gloucester," was 8,060. The Board of Naval Officers who examined the ships after the battle found that the total number of hits on the four Spanish vessels was 120, or about 1·5 per cent. Of these 120 hits, three only were recorded upon the turrets, which carried the main battery of 11-inch guns, so that our gunners, whom we consider to be the best in the world, while engaging the enemy at what may be considered a normal fighting range, had to fire 2,687 shells to score one hit upon the main turrets. We are considering, however, the question not merely of hitting but of disabling the turrets, and we find that of the three hits recorded, only one of them was made by an A.P. gun. Consequently we may assume that if a "Kearsarge" had been included among the ill-fated ships of the Spanish squadron at Santiago, she would have passed through that four hours' bombardment by the finest gunners in the world at the risk of receiving one vital blow out of 8,060 projectiles which fell upon the fleet.

Evidently we may put all of the eggs we may wish into the double-turret basket without much fear of their being broken.

Although theoretically it would be desirable to train the 13-inch guns on the barbettes, turrets, and belt armour, and the 8-inch guns on the lighter casemate armour, the moral of the battle off Santiago is that such a nice selection will never be made by the gunner, who will be more concerned with hitting the target at all than with the determination of where he will hit it. At closer ranges, of course, more accurate marksmanship will be possible, but the present indications are that naval battles will be fought at long range, and that they will be decided more by the decimation of the crews than by the destruction of the ship itself. The trend of future construction will be in the direction of less armour, more guns, and an increased rapidity of fire. The double-turret, by reducing the number of separate armoured positions and permitting more weight to be put into guns, conduces very materially to this result.—*Scientific American.*

A French View of the "Kearsarge."—The *Journal de la Marine* of France has not an altogether favourable opinion of the "Kentucky" and "Kearsarge." In its issue of 27th April it says:—"Their speed, though surpassing the expected 16 knots, appears a little low at this writing, when ships of this kind generally show a speed of 18 knots. In any case one ought not, it seems to us, to attach more importance than there is reason for to the maximum speed of these trials. The important thing is the maximum speed in actual service which depends upon many other factors than the trial average, especially upon the training of the striking *personnel* which engages less attention these days than it should. The Spaniards learned this to their cost in the Cuban war."

The protection given by the armoured deck to the part in the rear of the turret is considered altogether insufficient; and a weak point, our French contemporary holds, is the transverse bulkheads separating the guns of one side of the ship from those of the other. Against an explosive shell these bulkheads would show their weakness.

"There are no longitudinal bulkheads," it says, "joining the bulkheads to each other. An enfilading fire striking the deck above could cause tremendous ravages in the rapid-fire battery of 14 guns in the centre." The French critic steers clear of passing an opinion on the superposed turret system, beyond saying that the Americans appear no more settled as regards this system than they were some years ago.

The great extension of the use of electricity in the "Kearsarge" and "Kentucky" is the subject of favourable remark, qualified somewhat by the admission that a re-action against the use of electricity has set in with us, the chief apostle of the re-action being Admiral Melville. The French view is that if one can

place the generating dynamos near the boilers and machinery, as is generally the case, it is an advantage to replace the steam pipes of the motors with electric wires. Another advantage lies in the power of the electric motors to be put into action almost instantly, whereas the steam motors have to be heated in advance. The steel used in the large forgings of the machinery is likely, according to the French opinion, to have a much larger use. One of its chief recommendations being that it has less liability to fissure than ordinary steel. The French journal accompanies its article with a picture of the "Kentucky" under full speed.—*Army and Navy Journal.*

MILITARY NOTES.

PRINCIPAL APPOINTMENTS AND PROMOTIONS FOR AUGUST, 1900.

Major-General F. S. Russell, C.M.G., to be Colonel of the 1st Dragoons. Lieut.-Colonel J. V. V. Baker, R.G.A., to be Colonel. Lieut.-Colonel E. B. Coke, R.H.A., to be Colonel. Lieut.-Colonel R. B. W. Fisher, 10th Hussars, to be Colonel. Lieut.-Colonel C. A. Rochfort-Boyd, R.E., to be Colonel. Lieut.-Colonel M. W. Skinner, R.E., to be Colonel. Colonel (local Brigadier-General) A. R. F. Dorward, C.B., D.S.O., to retain the local rank of Brigadier-General and appointment of Brigadier-General on the Staff whilst employed in Northern China, subsequent to the arrival of Colonel (local Lieut.-General) Sir A. Gaselee, K.C.B., A.D.C., I.S.C. Colonel (temporary Brigadier-General) H. H. Stettle, C.B., D.S.O., Colonel on the Staff, to be Inspector-General Lines of Communication in South Africa. Lieut.-Colonel and Brevet Colonel (now local Brigadier-General) C. P. Ridley, to be an A.A.G., as an Assistant Inspector-General Lines of Communication in South Africa. Lieut.-Colonel J. E. Mein, I.S.C., to be Colonel. Major and Brevet Lieut.-Colonel (local Colonel) T. P. B. Ternan, D.S.O., the Royal Warwickshire Regiment, to be Colonel, in recognition of his services during the recent operations in Uganda. Brevet Colonel (local Major-General) Sir F. R. Wingate, K.C.B., K.C.M.G., D.S.O., is granted the substantive rank of Colonel in the Army, on appointment as Sirdar of the Egyptian Army. Colonel R. B. Mainwaring, C.M.G., to be Colonel to command the 23rd Regimental District (the Royal Welsh Fusiliers).

The under-mentioned officers are appointed temporarily Major-Generals on the Staff to command Brigades at Aldershot, with the temporary rank of Major-General whilst so employed: Colonel R. S. R. Fetherstonhaugh from Lieut.-Colonel h.p., and to have the substantive rank of Colonel in the Army; Colonel G. F. Guyon from the 7th and 57th Regimental Districts; Colonel T. E. Verner, C.B., from the 10th Regimental District.

Brevet Colonel J. Stacpole, from a D.A.A.G. to be Colonel on the Staff, and to have the substantive rank of Colonel in the Army. Major-General Sir R. Westmacott, K.C.B., D.S.O., I.S.C., to be a First-Class District Command in India. Colonel E. G. Barrow, C.B., I.S.C., to be a D.A.G. in India, and to have the temporary rank of Brigadier-General whilst so employed. Brevet Colonel H. P. Leach, C.B., D.S.O., from Lieut.-Colonel R.E. to command a Second-Class District in India, with the temporary rank of Brigadier-General whilst so employed, and to have the substantive rank of Colonel in the Army. Colonel W. Hill, C.B., I.S.C., to command a Second-Class District, with the temporary rank of Brigadier-General whilst so employed. Colonel H. E. Penton, I.S.C., to command a Second-Class District in India with the temporary rank of Brigadier-General whilst so employed. Lieut.-Colonel and Brevet Colonel F. Abbott, I.S.C., to be a Colonel on the Staff in India, and to have the substantive rank of Colonel in the Army. Colonel F. S. Gwatkin, I.S.C., to be an A.A.G. in India. Lieut.-Colonel E. A. Barclay, I.S.C., to be Colonel. Lieut.-Colonel E. A. W. S. Grove, the Queen's Own (Royal West Kent Regiment), to be Colonel. Colonel Sir C. H. Smith, K.C.M.G., C.B., h.p., to be Major-General. Lieut.-Colonel R. M. Greenfield is

granted the substant ve rank of Colonel in the Army on appointment as an A.A.G, in India. Major and Brevet Colonel B. T. Mahon, D.S.O., 8th Hussars (now Lieut.-Colonel, 12th Lancers), to be a Brigadier-General on the Staff, and to have the local rank of Brigadier-General whilst so employed. Major (temporary Lieut.-Colonel) C. J. Mackenzie, Seaforth Highlanders, to be Military Governor of Johannesburg, and to have the local rank of Colonel whilst so employed. Lieut.-Colonel C. K. Wood, R.E., to be a Colonel on the Staff for R.E., with the local rank of Colonel in the Army. Lieut.-Colonel C. O. Nicholetts, I.S.C., to be Colonel. Lieut.-Colonel W. H. White, R.E., to be Colonel. Lieut.-Colonel J. M. T. Badgley, R.E., to be Colonel. Lieut.-Colonel H. W. Duperier, R.E., to be Colonel.

INDIA.—The 2nd Brigade of the China Expeditionary Force (see August JOURNAL) should have been landed at Taku for the advance on Pekin. The men were, however, detained at Hong-Kong, and were recently re-embarked and landed at Shanghai.

A third brigade, under Brigadier-General A. J. F. Reid, C.B., is now on the move from India, some of the regiments having already embarked. The brigade is thus composed :—

4th Punjaubis.
5th Hyderabad Infantry.
34th Bengal Infantry.
14th Sikhs.
Divisional troops.
B Battery R.H.A.
16th Bengal Lancers.
3rd Bombay Cavalry.

The 4th Brigade will be under the command of Brigadier-General J. T. Cumming, C.M.G., and will consist largely of regiments from the Imperial Service troops patriotically offered by the Indian native rulers. At present the list is given out to be as follows :—

28th Madras Infantry.
6th Burmah Infantry.
The Bikaner Camel Corps.
The Alwar Infantry, with divisional troops of the 1st Jodhpur Lancers and Maler Kotla Sappers.

Besides these, there are about 800 men on their way as reinforcements from England and the Mediterranean, and about 700 artillery and infantry from the Cape, as well as a naval brigade of about 400 men from South Australia. In round numbers, it may be safely stated that in this China war Great Britain will have an army employed numbering some 26,000 men, of whom 20,000 men should be fully-trained fighting men, the other 6,000 being non-combatant bearers and other camp-followers.

Description and diagrams of a bivouac and shelter furnished by Major W. L. Harvey, 2nd Battalion Duke of Cornwall's Light Infantry.—The sheet is best made seamless, except along the ridge, which is all the better if the edges of the material overlap about a couple of inches, and are further strengthened with a strip of webbing. The two tags on either side greatly increase the inside area, as they help to form a sort of curtain. The poles should have screws inserted at each end, leaving about one inch exposed to hold the eyelet hole and cord at one end, and to prevent the pole slipping on the ground at the other end. In the present dry weather I find 5-inch French nails quite sufficient to act as pegs. When a pair are joined together an ordinary 8-foot by 4-foot (or larger) water-proof sheet can easily be secured to cover the opening.

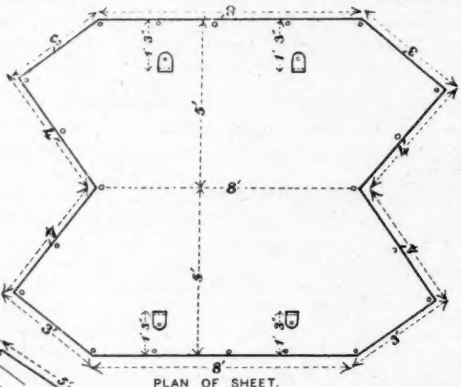
The advantages are : –

That no skill is required to make the sheet.

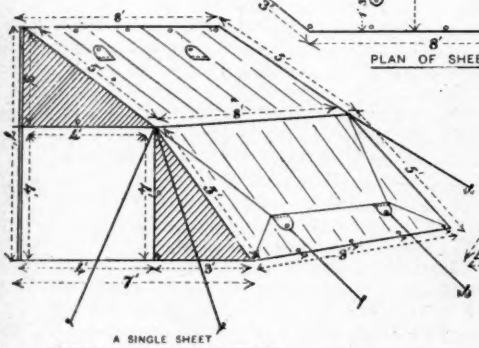
That no special tent ropes, runners, etc., are required, as any strong cord fastened to the eyelet-holes can readily be secured (with a clove hitch) to any improvised peg.

The sheet, being in one flat piece, cannot easily be damaged, and is very easily packed.

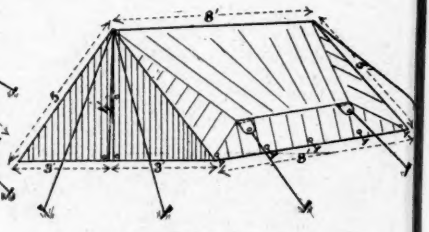
A pair joined together form an excellent tent, 14 feet by 8 feet by 7 feet high, and four sheets can be joined together to form a tent 14 feet by 16 feet by 7 feet high.



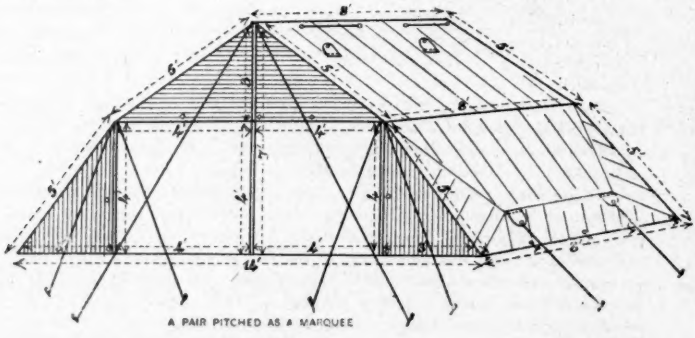
PLAN OF SHEET.



A SINGLE SHEET
PITCHED AS A SUN AND WIND SHELTER



A SINGLE SHEET
PITCHED FOR STORMY WEATHER, RAIN AND NIGHT



A PAIR PITCHED AS A MARQUEE

AUSTRIA-HUNGARY.—Four complete army corps, together with the Landwehr troops belonging to their various districts, will take part in this year's Imperial Manœuvres in Galicia. All Hungarian troops in the North Moravian, Silesian, Galician, Bukowina, and Kaschau commands have been placed under orders for these manœuvres, which will be on a larger scale than any hitherto held in Austria-Hungary. The Ist, VIth, Xth, and XIth Army Corps will take part in them.

The Ist (Cracow) Army Corps consists of the 5th (Olmütz) and the 12th (Cracow) Infantry Divisions and the Cracow Landwehr. The Regular troops of this corps are the 1st Infantry Regiment (4 battalions), the 100th (4 battalions), the 18th (3 battalions), the 54th (4 battalions), the 93rd (4 battalions), the 13th, 56th, 57th, and 20th (each 4 battalions), and the 5th Sharpshooters' Battalion.

The Cracow Cavalry Division consists of the 3rd, 10th, and 12th Dragoons and the 2nd Uhlans. The 13th and 16th Sharpshooters' Battalions are attached to the Division.

The Corps Artillery (1st Artillery Brigade) is made up of the 1st Corps Artillery Regiment, together with its Horse Artillery Division and the 1st, 2nd, and 3rd Division Artillery Regiment.

The Landwehr Division of the Army Corps consists of the 15th (Tropau), the 13th (Olmütz), and the 16th (Cracow) Landwehr Infantry Regiments, making altogether 11 battalions. The 4th (Olmütz) Landwehr Uhlan Regiment will also take part in the manœuvres.

The VIth (Kaschau) Army Corps is made up of the 15th (Miskolez) and the 27th (Kaschau) Infantry Divisions. These divisions are composed of the 65th, 66th, and 67th Infantry Regiments (3 battalions each), the 5th, 60th, and 85th (4 battalions each), 1 battalion of the 25th Regiment, the 29th Sharpshooters' Battalion.

The 6th Cavalry Brigade of the 4th and 10th Hussars, the 6th Artillery Brigade, with the 6th Corps Artillery Regiment (together with its Horse Artillery Division), the 16th, 17th, and 18th Division Artillery Regiment, finally the Royal Hungarian (Honved) Landwehr Infantry Division, consisting of the 9th, 10th, 11th, and 12th Hungarian Landwehr Infantry Regiments and the 5th (Kaschau) Landwehr Hussars.

The Xth (Przemysler) Army Corps, with the 2nd (Jaroslau) and the 24th (Przemysler) Infantry Divisions, made up of the 9th, 10th, 40th, 45th, 77th, and 89th Infantry Regiments (4 battalions each) and the 58th Infantry Regiment (3 battalions).

The Jaroslau Cavalry Division, with the 13th Dragoons, the 8th Hussars, the 6th, 3rd, and 11th Uhlans, and the 4th Sharpshooters' Battalion.

The 10th Artillery Brigade (the 10th Corps Artillery Regiment, with Horse Artillery Division, the 28th, 29th, and 30th Division Artillery Regiment).

In addition, the Przemysler Landwehr Infantry Division, consisting of the 17th and 18th Regiments (2 battalions each) and the 3rd Landwehr Uhlan Regiment, belonging to the Army Corps, will take part in the manœuvres.

The Xth (Lemberg) Army Corps, made up of the 11th and 30th Infantry Divisions, consisting of the following regiments, viz., the 15th, 24th, 30th, 55th, 95th, and 41st (4 battalions each) and the 3rd Battalion of the 58th Regiment.

The Lemberg Cavalry Division, with the 12th Hussars, the 4th, 7th, and 13th Uhlans; the Stanislau Cavalry Division, with the 1st, 2nd, and 9th Dragoons, the 14th Hussars, and the 1st Uhlans. The 12th, 17th, 24th, 30th, and 32nd Sharpshooters' Battalions are attached to this Division. Finally, the Lemberg Landwehr Infantry Division, with its 5 Landwehr Infantry Regiments, viz., the 19th, 20th, 22nd, 35th, and 36th (3 battalions each), and the 1st Landwehr Uhlan Regiment.

The Ist Army Corps consists of about 50 battalions, 31¼ squadrons, and 18 batteries; the VIth of 36 battalions, 18¾ squadrons, and 18 batteries; the Xth of

36 battalions, 31¼ squadrons, and 18 batteries; and the XIth Army Corps of 50 battalions, 62½ squadrons, and 18 batteries. To these must, of course, be added the necessary pioneer, hospital, and transport troops.

Hungary is represented by 38, Moravia and Silesia by 26, and Bohemia by 4 battalions. The Regular cavalry taking part in the manœuvres consist of nearly half of the whole of the cavalry of the Standing Army, and make up a total of 24 regiments, with 144 squadrons and 24 pioneer trains. Of these, ten regiments are Galician, six regiments (all Hussars) Hungarian, five Bohemian, two Moravian and Silesian, and one Lower Austrian.

The manœuvres will last from the 10th to the 15th September.—*Militär-Zeitung.*

FRANCE.—The Minister of War has sent to all corps commanders the results of the recruiting operations of 1899. These statistics must be made up annually and laid before the Chambers before the 30th June, and from them it appears that 324,538 young men, or 6,641 less than the preceding year, took part in drawing lots. 315,648 appeared before the Revision Boards. The 8,890 absentees were declared to have good cause for absence. It is probable that many of them were dead or expatriated, for none are declared as refractory.

The number of those exempted amounts to 29,313 men; so that the contingent only really reaches the number of 295,225 men, or 9,756 less than in 1898.

The distribution of this contingent on the recruiting list has been made as follows:—

Taken for 3 years	140,068
,, 1 year	50,206
Abroad (conditional total exemption)	652
Already serving	30,288
Put back	53,011
Classified in the Auxiliary Services	20,896
Debarred from service	104
Total	295,225

Those put back from the two preceding years are added to this contingent, viz.:—

9,880 taken for 2 years.
8,938 ,, ,, 1 year.
18,651 in the Auxiliary Services.

This gives to the Army:—

140,068 men for 3 years.
9,880 ,, ,, 2 ,,
59,144 ,, ,, 1 year.

Total ... 209,092 men to be enrolled.

In addition, there remain 39,547 for the Auxiliary Services—on paper in peace-time. The causes for the reduction of these effectives are as follows:—

6,939 sole supports of families, declared good for 3 years' service, will only do one.

464 taken for two years will also only do one.

And 1,649 sons of foreigners, or naturalised Frenchmen, who have managed to evade coming forward until after the age of 23, will do no active service, provided they pass at once into the Reserve.

In addition, 795 young soldiers, taken for 3 years, were at their own request drafted into the Colonial Army.

Thus, the contingent to be enrolled in the Territorial Army is reduced to 206,648 men, who are distributed as follows amongst the different branches of the Service:—

—	Called out for 1 year.	Called out for 2 or 3 years.	Total.
Infantry	54,747	91,161	145,909
Cavalry	—	18,360	18,360
Artillery	9,029	19,278	28,307
Engineers	1,273	3,753	5,026
Transport	1,212	2,040	4,252
Administration Troops ...	2,020	3,774	5,794
Totals	68,281	138,366	207,648

The numbers of those who could neither read nor write amounted to 19,165.

To the above numbers should be added:—

1st, the Algerian contingent of about 3,125 men, called out for 1 year, also

12,462 engaged for 3 years.
8,334 ,, ,, 4 ,,
5,196 ,, ,, 5 ,,

Total ... 25,992 men, of whom 9,155 are for the Navy or the Colonial Army, and also 7,330 men for foreign regiments, the Tirailleurs and the Spahis.

2nd, those who re-engaged to the number of:—

320 for 1 year.
2,952 ,, 2 years.
2,059 ,, 3 ,,
1,197 ,, 5 ,,

Total ... 6,528, of whom 6,006 are non-commissioned officers, making 248 less than in 1898.

Such are the recruiting results of the year 1899. They prove that the one-year enrolments are increasing. From 52,715 in 1891, they reach to-day 68,281. Although it is asserted that the French population is at a standstill, the total contingent, which is now 206,648, only amounted to 183,567 in 1891.—*Précis* from *Le Progrès Militaire.*

GERMANY.—Herr Mauser, the celebrated manufacturer of portable weapons, took out a patent at the beginning of the year 1899 for an automatic repeating gun which, in its mechanism and operation, recalled the pistol of the same nature that he had previously brought out, and which replaced the revolver for the use of officers in the German Army. The same inventor has quite recently made modifications according to the same principle in the German gun that has been definitely adopted.

In the Mauser automatic repeating gun the energy necessary for its operation is furnished by the recoil produced by the firing of each cartridge. After a cartridge has been fired, the breech moves backward and carries along the barrel, which is connected with it and which cocks the hammer and tightens a recuperating spring.

The connection of the barrel and breech then ceases, and the former is arrested in its travel, while the latter continues to recoil, by virtue of the velocity acquired, and brings about the extraction and rejection of the shell and the compression of a second recuperating spring. The first spring then expands and repels the breech, which shoves into the chamber the cartridge situated at the upper part of the magazine. After the breech is closed, the second recuperating spring expands in its turn and brings the barrel into a firing position.

All that is necessary, then, is to press the trigger in order to effect the firing. The operation of the weapon may continue in the same way until the magazine is exhausted. All that the marksman has to do is to charge the magazine, put the gun to his shoulder, take aim, and press the trigger.

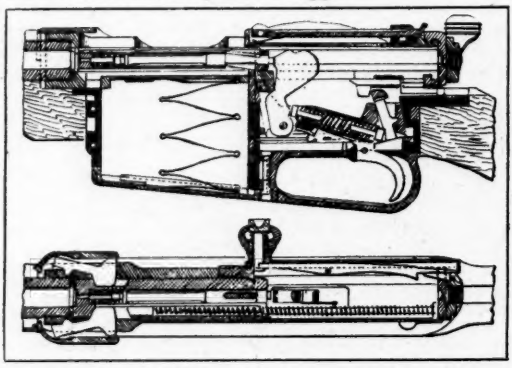


FIG. 1.—VERTICAL AND HORIZONTAL SECTIONS OF THE MAUSER GUN, WITH THE BREECH CLOSED.

The accompanying engravings, made from drawings deposited by Herr Mauser in London at the time that he took out his patent, represent the back of the weapon in vertical and horizontal section in the closed and open positions of the breech.

We shall refrain from giving a description of the numerous parts of the mechanism, which is somewhat complicated, since this would take up too much space. We shall be content to call attention to the magazine and the spring that raises the cartridges, to the two recuperating springs, and to the two symmetrical pieces that are seen in the horizontal projection in front of the breech and that serve for connecting the barrel with the latter during the first part of the recoil.

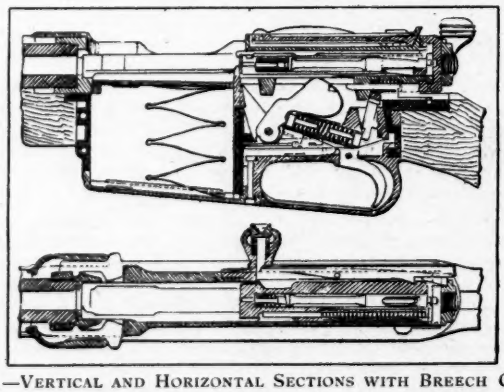


FIG. 2.—VERTICAL AND HORIZONTAL SECTIONS WITH BREECH OPEN.

At the back of the weapon there is a piece that can be arranged in three different positions—vertically to the right, vertically to the left, and horizontally to the left. To these positions correspond, respectively, firing by repetition, firing shot by shot, and the safety position of the weapon.—*La Nature.—Scientific American.*

The *Allgemeine Militär-Zeitung* states that a most interesting manœuvre was carried out at Gamsheim, in the neighbourhood of Strasburg, by the 2nd Regiment of Rhenish Hussars and the 15th Dragoon Regiment. A new method of crossing the Rhein was practised at this spot, where the river is about 1,500 metres wide. Boats were improvised out of lances and waterproof canvas. A single horse sufficed to carry material sufficient for the construction of two boats, and in a few minutes after arrival on the river bank the boats were ready for use, lances were made into oars, and the whole launched. Each boat carried sixteen men with their arms, and from four to six horses. The saddles were placed in the boats. On arrival at the opposite bank the boats were taken to pieces in a few moments, packed on horses, and the march resumed. The crossing was made without accident, and excited great enthusiasm amongst the spectators. The inventor of this method is Herr Adolf Rey, of Bischheim, near Strasburg, who himself directed the operations, and who was warmly congratulated by the officers present.

The manœuvres of the 15th Army Corps in Alsace will be executed as follows :— Brigade manœuvres will take place from the 1st to the 12th September, near Hagenau, for the 60th and 85th Brigades near Sarrebourg ; for the 61st, and near Bitche for the 62nd Brigade ; divisional manœuvres for the 30th Division, from the 14th to the 18th September, near Diemeringen, and for the 31st Division near Sarrebourg ; finally, army corps manœuvres from the 20th to 22nd September, near Sarrebourg.

Brigade manœuvres of the 11th and 15th Uhlan Regiments will be held from the 30th August to the 8th September, near Hagenau, and those of the 9th Regiment of Hussars and 15th Regiment of Dragoons from the 16th to the 22nd August, near Hagenau. The four regiments will also take part in the manœuvres of the 30th and 31st Divisions.

The Vote of the German Budget for the manœuvres of the present year shows very clearly the new corps formations and the effective of the various branches of the Service. Although certain corps and troops formations will not take place till the 1st October next, the effectives already published may be considered definite. A comparison of the relative military strength of Germany and France may consequently be readily arrived at.

GERMANY.

Infantry.—215 regiments (of which 175 have 3 battalions, and 41 have 2 battalions, plus 18 Jäger battalions) making in all 607 battalions, or 12,444 officers, 45,484 non-commissioned officers, and 333,064 men—total, 390,992 of all ranks.

FRANCE.

Infantry.—163 regiments of 4 battalions, 30 battalions of Chasseurs, 4 Zouave regiments of 5 battalions, 4 regiments of Tirailleurs of 6 battalions, 1 Sahara Tirailleurs battalion, 2 foreign regiments of 5 battalions, 5 African light infantry battalions, making in all 742 battalions, or 13,370 officers, 24,432 non-commissioned officers, and 342,068 men—total, 379,870 of all ranks.

It will be noticed that with an effective of nearly 391,000 men, Germany only has 12,444 officers in pay, whilst for 380,000 men France maintains 13,370. France has less regiments than Germany, but more battalions. It is a question whether the German system of three battalions to a regiment is not preferable to that of France, in order to facilitate the prompt and rapid mobilisation of brigades, and consequently of divisions and army corps, by means of homogeneous units animated by *esprit de corps*.

In France fourth battalions have been formed as a nucleus for reserve or even for territorial regiments, whilst the Germans have preferred to utilise the fourth battalions for the formation of new Line regiments, which their increasing

population permits of their raising, in view of the progressive increase of their large sections of the Army, such as brigades, divisions, and army corps. It should, besides, be taken into consideration that for only 607 battalions, the Germans dispose of 390,992 men, whilst the French have only 379,890 men under arms for 742 battalions.

GERMANY.

Cavalry.—93 regiments of 5 squadrons, plus 11 Jäger squadrons, making in all 476 squadrons, or 2,406 officers, 9,410 non-commissioned officers, and 56,819 men—total, 68,635 of all ranks, and 65,135 troop horses. 6 Jäger squadrons will be formed in 1901.

FRANCE.

Cavalry.—88 regiments of 5 squadrons, 1 regiment of 6 squadrons, 2 squadrons of Soudanese and Sahara Spahis, making, in all, 448 squadrons, or 3,891 officers, 4,552 non-commissioned officers, and 64,756 men—total, 73,199 of all ranks, and 61,028 troop horses.

The same remarks apply to the cavalry as to the infantry. For 476 squadrons, Germany only maintains 2,406 officers, whilst in France there are 3,891 officers for only 448 squadrons. In France the cavalry have only 61,028 troop horses for 69,308 rank and file, whilst in Germany for 66,229 rank and file they have 65,135 horses.

GERMANY.

Artillery.—88 regiments of field artillery, the School of Gunnery for Field Artillery at Jüterbog, making up 562 batteries and 37 battalions of foot artillery, or 3,852 officers, 16,171 non-commissioned officers and 71,352 men—total, 91,375 of all ranks.

FRANCE.

Artillery.—40 regiments of field artillery, consisting of 508 batteries. The foot artillery battalions, numbering 18, are organised in batteries to the number of 112. But as the Germans do not divide their foot artillery battalions into batteries, it would not be proper to add the 112 foot artillery batteries to the 508 already mentioned. The total, then, of the French artillery effective is 3,884 officers, 7,125 non-commissioned officers, and 66,204 men, or, altogether, 77,213 of all ranks.

Thus the German artillery has, in peace-time, 54 more field batteries, and, in addition, 19 more foot artillery battalions than the French.

GERMANY.

Engineers.—25 pioneer battalions, consisting of 571 officers, 2,310 non-commissioned officers, and 12,504 men—total, 15,385 rank and file. 7 battalions of railway troops, 1 administrative section and ballooning sections, or 192 officers, 754 non-commissioned officers, and 3,973 men—total, 4,919 rank and file. 3 telegraph battalions, consisting of 45 officers, 145 non-commissioned officers, and 1,202 men—total, 1,392 rank and file, and these together make a grand total of 21,696 rank and file of the Pioneers.

FRANCE.

Engineers.—7 regiments of sapper miners of 2 or 3 battalions each, making up 20 battalions, 3 railway battalions, 1 telegraph battalion, 1 ballooning battalion of 4 companies, and 7 companies of drivers, making up 501 officers, 1,152 non-commissioned officers, and 11,773 men—total 13,426 rank and file.

The French have railway administrative sections in peace-time as the Germans have, but they have ready for mobilisation 9 technical sections of field railway, composed exclusively of railway engineers, *employés* and workmen, all belonging to the Reserve and to the Territorial Army.

GERMANY.

Transport.—23 battalions, plus 9 groups of teams for the foot artillery. The effective strength of this corps is 234 officers, 1,819 non-commissioned officers, 6,426

men, 29 doctors, 23 paymasters, 23 veterinary surgeons, 4,417 horses—total, 8,554 rank and file.

FRANCE.

Transport.—20 squadrons of 3 troops, plus 12 troops in Africa, or 412 officers, 815 non-commissioned officers, and 6,940 men—total, 8,167 rank and file.

One notices the same superfluity of officers already remarked in the infantry and cavalry. It is certain that in this branch of the Service the great number of detachments would be commanded by non-commissioned officers in the event of war.

GERMANY.

General Effective.—23,850 officers, 80,556 non-commissioned officers, 491,134 men (not including one-year volunteers amounting to about 10,000), 2,165 doctors, 1,044 paymasters, 671 veterinary surgeons, 1,001 armourers, 93 saddlers, 102,929 troop horses (not including officers' chargers, one-year volunteers' horses, etc., which would bring the total up to about 125,000), making up the permanent effective strength (deducting one-year volunteers) to 600,516 rank and file.

FRANCE.

General Effective.—The numbers already given under the different headings make up a total of 537,895 rank and file, but the Budget effective includes other corps and troops than those already mentioned and which have no equivalent in Germany. Such are, for instance, the remount companies, sections of secretaries, clerks and administration workmen, companies of artillery artificers and disciplinary troops. According to the 1900 Budget, the total effective strength of the French Army, including these latter, amount to 22,205 officers, 41,038 non-commissioned officers, and 516,962 men, or 580,205 rank and file.—*Précis* from *Le Progrès Militaire.*

ITALY.—The following is the composition of the Italian China Expeditionary Force:—

Commander—Colonel Garioni.
1 Infantry Battalion of 4 Companies.
1 Bersaglieri Battalion of 4 Companies.
1 Machine Gun Battery.
1 Section of Engineers.
1 Commissariat Section with 2 Field Bakeries.
1 Field Hospital with 50 beds.

The following special indemnities, in addition to their daily pay, are issued to officers of the Expeditionary Force:—

1st. A fixed equipment indemnity of:—
1,500 lire for Colonels.
900 ,, for Lieut.-Colonels and Majors.
600 ,, for Captains.
400 ,, for Lieutenants and Sub-lieutenants.

2nd. A daily field allowance of:—
20 lire for Colonels.
15 ,, for Lieut.-Colonels and Majors.
10 ,, for Captains.
8 ,, for Lieutenants and Sub-lieutenants.

3rd. A daily ration reckoned at 1 lira a ration.—*La France Militaire.*

The *Italia Militare e Marina* states that the Italian Army Manœuvres will take place this year from the 1st to the 12th September. The Genoa Division of the IVth Army Corps will manœuvre in the upper valley of the Bormida. The troops will consist of the 43rd and 44th Infantry Regiments, forming the Forli Brigade, the 83rd and 85th Regiments of the Venice Brigade, the 12th Bersaglieri Regiment, one brigade of the 4th Field Artillery, two squadrons of the Caserta

Cavalry Regiment, one company of the 1st Engineer Regiment, a half medical and a half commissariat section. Troops belonging to the Vth Army Corps, which consists of the Verona and Padua Divisions, will manœuvre among the Berici and Enganei hills. The Padua Division, after various manœuvres, will concentrate at Montebello on the 6th and 7th September. It will then be opposed by the Verona Division, which will have concentrated at St. Bonifacio, after having manœuvred in the neighbourhood of St. Giovanni, Ilarione, and Chiampo.

UNITED STATES.—The following memorandum from the Adjutant-General's Office gives the details of the United States China Expeditionary Force under command of General Chaffee :—

——	Officers.	Enrolled men.	Total.
9th U.S. Infantry	39	1,271	1,310
14th ,, ,, (8 companies)	22	1,058	1,080
2nd ,, ,, ,, ...	22	1,058	1,080
8th ,, ,, ,, ...	22	1,058	1,080
15th ,, ,, ,, ...	22	1,058	1,080
5th ,, ,, ,, ...	22	1,058	1,080
6th U.S. Cavalry and recruits	27	1,083	1,110
1st ,, ,, (8 troops)	20	834	854
3rd ,, ,, (5 troops)	10	428	438
9th ,, ,, (8 troops)	20	834	854
E, Engineer Battalion	2	150	152
F, 5th Artillery (1 battery)	4	138	142
Total	232	10,028	10,260

To these must be added the staffs of the Expeditionary Force and 4 batteries of the 3rd Artillery, which would bring the total strength up to about 10,700 of all ranks. 500 men have also been landed from the war-ships.

NAVAL AND MILITARY CALENDAR.

AUGUST, 1900.

1st (W.) The Advance on Pekin by the Allied Troops commenced.

,, ,, A Supply Train was wrecked on the Krugersdorp-Potchefstroom Railway by the Boers.

2nd (Th.) An attempt was made on the life of the Shah of Persia in Paris by an anarchist named Sabson, who was arrested.

,, ,, 700 Boers surrendered to Sir A. Hunter.

,, ,, The Staff of the German Chinese Expeditionary Force, a Field Post and Engineers left Braemarhaven for China in the "Rhein" and "Adrea."

,, ,, 1,000 United States Infantry and 4 troops U.S. Cavalry left San Francisco for Taku in the "Meade."

,, ,, A squadron of 3rd U.S. Cavalry and a battalion of Engineers left San Francisco for Taku in the "Aztec."

,, ,, Headquarters and 5 Companies 34th Pioneers
1 Section No. 4 Native Field Hospital
1 Section British Field Hospital } Left India for China in the "Clive."

4th (Sat) General Ian Hamilton drove the Boers from the Magaliersberg Mountains, with a loss of 41 wounded.
,, ,, 3,348 Boers, under Commandant Prinsloo, surrendered to Sir A. Hunter.
,, ,, The Boers derailed and attacked a train near Kroonstad.
,, ,, General Gough surprised a Boer laager near Standerton.
,, ,, Harrismith surrendered to General Macdonald.
5th (S.) Allied troops defeated the Chinese and occupied Peitsang.
6th (M.) Yangtsun captured by the Allied Troops, who lost heavily.
7th (T.) New South Wales Contingent (253 members of Naval Brigade) left Sydney for China in the "Salamis."
8th (W.) Field-Marshal Count von Waldersee appointed to the chief command of the Allied Chinese Expeditionary Forces.
10th (F.) A plot was discovered at Pretoria to abduct Lord Roberts and to murder the principal British officers in that town. Ten conspirators were arrested.
11th (Sat.) French Torpedo-boat Destroyer "Framée" sunk by collision with "Brennus" off Cape Trafalgar.
,, ,, King Victor Emmanuel III. of Italy took the constitutional oath before the Italian Parliament.
12th (S.) Sir Redvers Buller's Force arrived at Ermelo. 200 Boers surrendered at that place.
13th (M.) Launch of first-class armoured cruiser "Hogue" from Messrs. Vickers, Maxim & Co.'s Shipbuilding Yard at Barrow-in-Furness.
14th (T.) Lord Methuen captured one of De Wet's guns.
15th (W.) Pekin was relieved by the Allied troops.
17th (F.) H.M.S. "Pegasus" paid off at Chatham.
,, ,, Lord Kitchener relieved Colonel Hore's garrison at Eland's River.
18th (Sat.) H.M.S. "Sappho" commissioned at Chatham for S.E. Coast.
20th (M.) General Ian Hamilton captured 2 Krupp guns. 700 Boers surrendered at Harrismith.
21st (T.) Allied troops seized the Forbidden City at Pekin.
22nd (W.) Lieutenant Hans Cordua was found guilty by Court-Martial of attempt to abduct Lord Roberts and murder British officers, and condemned to death.
23rd (Th.) General Baden-Powell rescued 100 British prisoners.
24th (F.) Lieutenant Hans Cordua was shot.
25th (Sat.) Some of the Liverpool Regiment were ambushed by the Boers, 10 killed, 46 wounded, and 32 missing.
26th (S.) General Bruce Hamilton defeated the Boers at Winberg and captured Commandant Olivier and his three sons.
27th (M.) Sir Redvers Buller captured Bergendal and took many prisoners and a pom-pom.
,, ,, General Baden-Powell occupied Nylstroom without opposition.
28th (T.) Sir Redvers Buller occupied Machadodorp.
,, ,, General French occupied Elandsfontein.
,, ,, Allied forces marched through Pekin.
29th (W.) Bresci, the assassin of King Humbert of Italy, was sentenced to penal servitude for life.
30th (Th.) H.M.S. "Archer" commissioned at Chatham for Australia.
,, ,, The British prisoners at Nooitgedact were released by the Boers.

Addenda to July Calendar.

3rd (T.) Launch of first-class battle-ship "Wittelsbach" from Imperial Dockyard, Wilhelmshaven, for German Navy.
14th (Sat.) Launch of first-class armoured cruiser "Marseillaise" at Brest for French Navy.

FOREIGN PERIODICALS

NAVAL

ARGENTINE REPUBLIC.—*Boletín del Centro Naval.* Buenos Aires: June, 1900.—"The Moral Factor of Fleets.' "Multiple Telegraphy." "Modern Powders." "The Chubut River." "Belleville Boilers." "Projected New Regulations for the Navy."

July, 1900.—"King Humbert of Italy." "Interesting Gunnery Experiments: The 'Belleisle.'" "Electrical Instalments in Ships of War." "The Supply of Coal for Fleets." "Ships against Harbour Fortifications." "Modern Powders" (*continued*).

AUSTRIA-HUNGARY.—*Mittheilungen aus dem Gebiete des Seewesens.* Pola: No. 8. August, 1900.—"The Old Roman Fleet." "Proposals for the Construction of a Steamer, specially built in Life-saving Sections." "The 'Belleisle' Experiments." "The Marconi Wireless Telegraphy System." "German Naval Estimates for 1900." "Foreign Naval Notes."

No. 9. September, 1900.—"The Question of the Practical Education of Our Future Mercantile Captains." "Proposal for Saving Life at Sea." "New Submarine Boats." "On Torpedo-boats." "The Schneider-Canet Submerged Tubes for Discharging Fish Torpedoes on the Broadside." "Budget for the Austro-Hungarian Navy for 1900." "Foreign Naval Notes."

BRAZIL.—*Revista Maritima Brazileira.* Rio de Janeiro: July and August, 1900.—Have not been received.

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MILITARY.

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BELGIUM.—*Bulletin de la Presse et de la Bibliographie Militaires.* Brussels: 15th August, 1900.—"Railways from a Military Point of View" (*continued*). "Practical Instruction of Troops and Cadres" (*continued*). 31st August.—"Railways from a Military Point of View" (*continued*). "Use of Machine Guns on the Battle-field."

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SWITZERLAND.—*Revue Militaire Suisse.* Lausanne: August, 1900.—"The Handling of the Infantry at the 1st Army Corps Manœuvres." "The German Field Howitzer 98" (with 3 plates). "The Passage of the Great St. Bernard in 1800" (*concluded*).

NOTICES OF BOOKS.

The Campaign of 1815—Ligny, Quatre-bras, Waterloo. By W. O'Connor Morris. London: Grant Richards, 1900. Price 12s. 6d.

Mr. O'Connor Morris has done excellent service in collecting and analysing much of the documentary evidence which deals with the final collapse of the Napoleonic power, but the book jars very much in the stand-point the author has assumed by his constant references to the "scientific student of the art of war," the "true student of war," etc., and his many contemptuous references to the work of other eminent men and tried leaders who have ventured to disagree with him.

Mr. O'Connor Morris lecturing Clausewitz on the Art of War recalls too vividly Landseer's picture of "Dignity and Impudence" to those trained soldiers who thoroughly understand the value of such accurate thinking as that of the great German strategist.

The truth is, Mr. Morris is himself ignorant of the starting-point of modern military criticism, which indeed we owe to Clausewitz, and the men who with him had studied every element of the great Corsican's play with the fixed determination of finding out how to beat him.

Nowadays it is seen very clearly that the question as to the personality of the man who gave a wrong order or carried a right order to the wrong destination concerns only that individual's relations and descendants. What does signify is, how it was possible under the circumstances that on a given day a certain percentage of mistakes in the staff service of the French Army happened, and that these mistakes had such disastrous consequences. To ascertain this it is indeed necessary to trace effects to their fountain source, which implies a detailed and minute study of the break-up of the old French Royal Army, and the re-creation of a new one from the revolutionary levies.

With that knowledge, the whole sequence of cause and effect becomes abundantly clear, and it is seen that Napoleon's design failed in execution, not for want of brilliancy of conception, but because from the composition of the French Army, and the training of the staff, there was no adequate inherent probability that, first, orders would be correctly drafted; secondly, punctually transmitted; thirdly, executed in the spirit which was intended; and the whole end and aim of modern military training as practised in foreign Armies, and initiated by Clausewitz, is to secure the best attainable guarantee that these three conditions should be realised in practice.

Most people will agree with Mr. Morris that Napoleon's plan of campaign was most brilliant in its conception, but in warfare, or, indeed, in any practical sphere of life, brilliancy of conception without certainty of execution does not attract either confidence or sympathy.

When an engineer designs a bridge which fails in execution because the materials available for its construction do not possess the requisite qualifications of elasticity, tenacity, and resistance to compression, however much we may admire the mathematical dexterity of the designer, we think twice before employing him again, and this case forms an exact parallel to Napoleon's failure in the Waterloo campaign. As a piece of "drawing board" strategy it was sublime, as a piece of practical troop-leading in the field it was, and could only be, a fiasco, because the materials at his disposal failed to endure the designed strains.

If Mr. Morris, in defence of his idol, suggests that Napoleon could not have known the weakness of his materials, the reply is that to justify his reputation as a great leader, he ought to have known, for it is this faculty of judging accurately the exact fighting value of his troops, not his skill in designing impracticable

plans of campaign, which constitutes the chief claim to consideration as a general. Herein lies the sharp distinction between the art of war as taught by Clausewitz and Moltke, and the science of strategy which has in England until recently been studied officially in the pages of Hamley and his school.

Students were taught to see in strategical combinations, infinitely more simple than moves on a chess board, the highest science of the military mind. They, in Germany, are taught to realise that whereas anybody can design paper plans of campaign, it takes an artist to execute even his own, and that the highest expression of the art is attained when the best practical use is made of the available means combined at the right time and place.

The Naval Annual, 1900. Portsmouth : Griffin and Co. Price 21s.

For the first time since it was started—fourteen years ago—this excellent publication appears unedited by a Brassey—Mr. T. Brassey, who some time back took over the work from his father, the original founder of the Annual, being in South Africa with his regiment of Yeomanry. We congratulate Mr. Leyland, on whom has devolved the duty of editing the present issue, on the result of his labours, especially in view of the fact that he was deprived by death of the services of the late M. Weyl, the able editor of the *Yacht*, who for many years had contributed the chapter on the "Progress of Foreign Navies." The Annual has only quite recently sustained a more severe loss by the death of Captain Orde-Browne, R.A., who has so long and ably contributed Part III. of the book on "Armour, Ordnance, and the Tables of British and Foreign Guns," which, in the present issue, is as interesting as ever, as Captain Orde-Browne champions our guns against some of their numerous detractors. One of the ablest papers in the new edition is one by Commander, now Captain, R. H. Bacon, D.S.O., on the "Tactics of Fast Craft"; while Mr. Thursfield deals exhaustively and critically with last year's Naval Manœuvres. Another interesting essay is the one on Naval Training, in which the various views now held by different authorities on this important subject are discussed, while Mr. Hannay contributes a short historical sketch on Naval Brigades. There is still room for improvement in many of the plates of the ships of war, but the defective ones will be dealt with, we presume, in the near future, but otherwise the new edition of the Annual seems equal to its predecessors.

Notes on Organisation and Equipment. By Lieut.-Colonel F. LUTTMAN-JOHNSON. Pamphlet. Malta, n. d.

From Weissenburg to Sedan. By Major-General A. E. TURNER, C.B. Pamphlet. London, 1899.

Short Tactical Studies, I.—The Battle of Wörth. By Lieut.-Colonel G. F. R. HENDERSON. Pamphlet. Yorktown, 1899.

Mobilisation for War. By Colonel T. STURMY CAVE. Pamphlet. London, 1900.

Field Hospitals and Ambulances for Hill Warfare. By Lieut.-Colonel C. J. MCCARTIE, M.A., M.D., I.M.S. Pamphlet. Calcutta, 1899.

The Defence of India's North-West Frontier. By Colonel H. B. HANNA. Pamphlet. Petersfield, n. d.

War Scares and the Volunteers—An Imperial Reserve. By Major HEATH. Pamphlet. London, 1896.

Boer War, 1899. By Lieut.-Colonel H. M. E. BRUNKER. Pamphlet. London, 1899.

A Short Military Report on Delagoa Bay. By Captain C. H. CLAY. Pamphlet. Simla, 1899.

THE SIR GEORGE CHESNEY GOLD MEDAL.

See page 1097.